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THE
PRINCIPLES OF RATIONAL
MEDICINE

A FAREWELL LECTURE

DELIVERED TO THE

STUDENTS OF THE CALCUTTA MEDICAL COLLEGE.

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THE PRINCIPLES OF RATIONAL MEDICINE.

*A Farewell Lecture delivered to the Students of
the Calcutta Medical College.*

GENTLEMEN,

I have been in the habit for some years back of concluding my lectures with a word of advice as regards the future—an admonition on some particular point connected with the practice of the profession of medicine. I have done so in the hope that, spoken at the very end of the course, these words might arrest the attention and abide in the memory, and perhaps produce a lasting influence for good. As this is the last lecture of the last course of lectures on the Principles of Surgery which I shall have the privilege of delivering in this school, I have thought it well to improve on my annual custom by selecting a specially important subject of admonition, and presenting it to you with greater elaboration than I have hitherto considered necessary. In a course of 70 lectures of one hour's duration, it is impossible to do more than expound general principles, and one is compelled to leave details to be filled in by students through observation and study. The great aim of the professor should be to describe

and illustrate the best possible manner of applying in practice the principles which, founded on anatomy, physiology, and pathology, are finally formulated from and tested by clinical research and study. This has been my chief object in addressing you here; and if I have succeeded in imparting to you sound principles and impressing upon your minds sound methods of investigating, recognising and healing diseases, I have done all that under the circumstances it was possible to do. But, underlying all my teachings, there has been present with me one ruling thought, which I have endeavoured to illustrate and commend for imitation at every step, and which I would now make the subject of these closing remarks. It is this—stated briefly and didactically—

BASE YOUR PRACTICE UPON RATIONAL PRINCIPLES.

The human mind is so constituted that it is almost inconceivable that any human being should deliberately perform any action whatever without a reason of some kind. To act otherwise would be madness. And, in undertaking the important and responsible office of healing disease, men have always professed to proceed on rational grounds of some description. The question therefore comes to be—What kind of reasons are they which are entitled to reliance in practising the healing art?

1. In the first place, I may dismiss as almost outside the pale of reason all mysterious, miraculous, and transcendental pretensions; and that appeal to human credulity which vaunts one particular remedy as curative of most, if not all, ailments to which the human body is subject. It is curious how well-persistent and loud asse-

vation succeeds in this world. And in no department of business is wide and blatant advertising so useful as in that of the charlatan. I need not waste time by exposing the folly, or temper by denouncing the mischievousness of this kind of practice. It is a case of knavery on one side and simplicity on the other. Assuredly the barefaced advocacy of an interested vendor constitutes no sufficient reason for the use of a nostrum which is credited on no foundation of fact with attributes little short of miraculous.

2. Another basis of practice which is more plausible, but at the same time very deceptive; if not dangerous, is simple imitation. Something has been advantageously done or given in certain circumstances, and the argument is that the same thing is always likely to be equally advantageous in the same or similar circumstances. This seems reasonable enough; but there are two postulates which are necessary for the successful application of this principle, namely, first, that the reputed effect has really been achieved by the means employed; and, second, that the circumstances are the same. In order to settle these postulates, skilled observation and careful inquiry are necessary, and these are generally wanting in this sort of practice, which is usually adopted by ignorant persons and in a blind haphazard sort of way. Rational imitation grounded on scientific knowledge and thorough study of pathology and therapeutics is legitimate; but mere imitation without such knowledge and study is beset with fallacies and perils at every step.

3. Akin to this false method of practice is pure empiricism, which, without burdening itself with much study of disease or drugs, contents itself with observation of symptoms and with traditions as to what has been found good for such or such a complaint. Experience is continually appealed to as a justification of this kind of practice, but the experience is too often a superficial and unreal experience and the important elements of research and introspection are too often wanting. Scientific empiricism, which represents an experience based on systematic investigation and on knowledge acquired by scientific methods duly tested and proved, is a very different thing from the empiricism of the ignorant and indolent, and it is against this that I wish to warn you.

4. So far, the so-called principles of practice which I have indicated may be designated by the terms "rule of thumb" or "hand to mouth;" but there is in the human mind a hankering after laws and a hunger for guiding principles. Combined with that, there is also a desire for finality, for some resting place, some rock on which amid the surging of waves and shifting of sands, the feet may rest secure. The history of medicine gives ample evidence of this great and constant striving after some general law which will dominate and guide both the science and the art of medicine. We find it in physiology, in pathology, and therapeutics. We have had mechanical, chemical, and vital theories of life; solidist, humoralist, neuro-pathical, and parasitical theories of disease; and in therapeutics various formulæ have been advanced which have been

vaunted as absolutely certain and infallible rules for the selection of drugs. These formulæ have given origin and name to various sects or schools of practitioners, such as the homœopaths, allopathists, antipathists, monopathists, and so forth. This method of practising by and in obedience to formulæ saves a great deal of trouble, and presents a semblance of scientific accuracy and method. Given the disease, find the drug that fulfils the formulated indication and success is assured. But the questions arise—Can the phenomena of life and disease be included in a principle or expression or formula of this sort? Is such a formula, if true at all, universally so? Are the phenomena of disease and drug action so definite and uniform that they can be brought under the sway of fixed rules of this kind? I am inclined, for reasons which I shall presently state, to answer these questions in the negative; and, in addition, it is necessary to inquire—How have these formulæ been arrived at? Have they been reached by scientific methods? Are they capable of being scientifically tested and proved? And, do they depend on objective or subjective evidence—the evidence of the senses aid by instruments of precision or of the imagination? You will find on examining these formulæ that they do not satisfy these requirements, that they are the products of fancy, rather than the outcome of scientific research, and that they represent partial truths and superficial analogies rather than deductions from scientific observation and experiment. I do not therefore advise you to pin your faith on formulæ. They are mostly delusive

and visionary, opposed to scientific progress, and inconsistent with what we know of the infinite mutability of the manifestations of physiological, pathological, and therapeutical action.

5. If, then, the grounds of practice which I have described are unreal and misleading, what are the foundations of rational medicine? Briefly and generally stated they are these:—

1st.—We have to deal with the man not with the disease — with the human being, who has under some noxious influence acquired some disorder of health, and our task is to remove this disorder and to restore him to health. It is the being, the organism, not the name with which we must concern ourselves.

2nd.—The subject of our attention — the human being — has attained the organic structure which he presents for our study through a process of evolution, and this fact places him in relation to the past history of organized beings and of the human race, from the earliest period regarding which we are able to obtain knowledge until now, and brings him into affinity with all other created beings, with which he still retains certain resemblances in structure and functions.

3rd.—What he is and does is the result of an adaptation to his surroundings under certain laws of progress and perfection which are still in operation, and which impel him towards a still higher and more useful life.

4th.—We have to consider the human being as in a state of incessant action and change; and the activities and changes which he manifests constitute his life; and these are accurately adjusted

to activities and changes occurring in his environment, to which he reacts under well-defined laws. The influences acting upon man are manifold and infinite in their variations. They are cosmic, climatic, hygienic, dietetic, and medicinal. The place he inhabits, the air he breathes, the food he eats, the forces of nature which he encounters, the objects with which he comes in contact, the foreign materials other than food which he may breathe or swallow—all these act upon him and produce certain reactions.

5th.—Man possesses the power of adaptation to these various influences within certain limits so that he preserves a normal type of structure and standard of vitality while being acted on by and reacting upon them. This is called health. Beyond these limits, the influence of these agencies may give rise to disorder or disease, or this may result from the impairment of his power of adaptation.

6th.—There is no new element introduced into the body by these disturbing agencies unless in the shape of foreign material which has effected an entry into it. As regards the disturbances which constitute disease, they consist from a functional point of view in excess, derangement, impairment or abolition of the ordinary manifestations of life; from a structural point of view, they are aberrations or reversions, or degenerations; from a chemical point of view, they are materials of simpler composition and lower degree inclining to inorganic types. "There is," Virchow observes, "no other kind of heterology in morbid structures than the abnormal manner in which they arise, and this abnormality

consists in the production of a structure at a point where it has no business, or at a time when it ought not to be produced, or to an extent which is at variance with the typical formation of the body." In other words, pathology is physiology deranged under the operations of materials or influences abnormal or hurtful in kind or degree.

7th.—We possess control over these things. We can ascertain which are beneficial and which noxious, and within what limits the power of adaptation prevails. We can shun them, we can modify them, we can remove them, and the exercise of this power constitutes the art of medicine, preventive and curative, in its highest and best sense.

8th.—But even after the organism has succumbed to some deleterious agent or agency, it possesses a power of recovery from the damage done. This power may be exercised in the way of calling upon that reserve force which we possess in our body as a whole and in all our tissues or organs, or by bringing into existence remedial processes, such as vomiting, purging, inflammation or fever, or by neutralising or expelling the cause of disorder, or by giving the damaged system or organ rest, or by a process of repair when structural damage has been done. In all these and other ways the natural power of recovery possessed by the body and every part of it is displayed. Without such a power our efforts to cure disease would be futile. All these efforts must be made in accordance with the ascertained laws of natural recovery, and we can only be said to cure disease in the sense that we place the individual in the best possible position

for the most speedy and effective operation of these natural processes of recovery.

9th.—But it is important to note that not only is the body as a whole subject to injurious influences, but that each separate part of it may undergo damage, and then the injury of the part may affect the whole or other parts in relation to it. From this point of view, the several organs of the body are related to each other as if they were separate organisms acting and reacting, on the rest of the body as an environment, and they undergo sundry compensatory and vicarious changes which also tend to promote the recovery of the whole in disease.

10th.—Thus, both in pathology and therapeutics, we have to take account of causative and curative influences outside the body and inside the body; and the more thoroughly we are acquainted with these influences and their effects, the more competent are we to restore disordered function to order and help damaged structure to undergo repair.

These then are the principles of rational medicine stated in very general terms. They constitute the foundation of the healing art and are of universal application—cover every circumstance and case in which as practitioners we may be required to act. From these principles, several conclusions of great interest as affecting the position and practice of our profession flow:—

Mark, first, the extent of the field whence knowledge has to be reaped for use in practice. It is simply co-extensive with all science, and there is not a department or fact of science which

does not or may not bear more or less directly on the objects of our studies and efforts.

Then, secondly, observe how vain it is to expect finality in medicine and how foolish to reproach its ministers with changes in theory and practice. Science is ever moving forward, ever adding to its conquests, ever gaining in breadth, in accuracy, in clearness, and in truth; and every such advance in scientific knowledge imports wisdom and power into our proceedings as doctors. From this consideration springs the obligation of diligence, of incessant study, of observation and experiment, of continual striving to learn as long as the faculty of learning remains; and this very uncertainty and mutability of the science of medicine, which is cast as a reproach by the thoughtless, constitutes to the earnest and studious the great attraction and charm which the profession of medicine possesses.

Thirdly, note the wide scope which these views impart to our profession as an art. Drugs and operations (and in these terms I include all medicinal and mechanical methods of treatment) do not represent the end and object of our calling. It is our business to study all influences, climatic, hygienic, dietetic, and medicinal, which affect the body for good or evil, and so control these as to maintain health, guard against disease, and restore soundness. Drugs and operations are the least and last of our resources.

Fourthly, with what dignity and importance does this aspect invest our profession. There is nothing in nature which does not directly or indirectly concern us, and no situation or act of any human being which may not interest us.

And in all the affairs of life, public, domestic, and personal, we are asked to intervene and advise, as the possessors of a knowledge and power which largely affect the success, the welfare, the happiness of man and men.

Fifthly, in all this it is necessary that we should cultivate a spirit of humility in view of our incapacity to cope with all the subtle agencies acting from without and within which occasion disorder of health and endanger life. We are still in many respects very ignorant and very helpless. It becomes us fully to recognise and admit this, and to strive to our utmost for more light and better skill. The phrase "I cured" is as hateful as it is untrue. It is the shibboleth of quackery. The utmost credit that we have a right to claim is that the patient recovered under our management; and before we can establish a case for the benefit of our intervention, we must be prepared to prove that recovery has taken place in a larger proportion of instances in consequence of such intervention, or that the patient has done better, recovered more quickly, than if he had been left alone.

And this attitude of humility in the presence of great responsibilities and much shortcoming should suggest a feeling of tolerance towards others in so far as that feeling can be properly entertained. It is impossible to sympathise with or in any way encourage those who for their own advantage, in ignorance and in greed, trade upon the infirmities of humanity: but there are many who have honestly persuaded themselves that they have found in some empirical method or plausible formula

a key to the treatment of disease. The method or the formula may contain a germ of truth; as long as it is used for the presumed benefit of the patient rather than of the practitioner, so long may we honor the motive while we regret and condemn the narrow or mistaken doctrine. Depend upon it the more enlarged and philosophical our conception of our duties and responsibilities—the higher our aims and wider our grasp—the happier will our life be and more productive our methods. The profession of medicine is to its earnest votaries a source of endless interest and pleasure, and if I have succeeded by the words which I have now spoken in impressing upon you a loftier and truer notion of its scope and dignity and responsibility, I feel assured that I have bestowed upon you something far transcending in value material riches, namely, that which will render your future lives more fruitful and enjoyable. In taking leave of you and of this college, I cannot offer you a better wish than that you should reap from the study and practice of rational medicine all the pleasure and profit which, when properly and unselfishly cultivated and applied, it is so singularly and eminently capable of conferring.

MEDICAL EDUCATION.

THE rise and progress of medical education in India is a subject of congratulation alike to the Indian Medical Service by which the results have been achieved, and to the Government and people who have so greatly benefited thereby. Commencing with bedside instruction in Military and Civil Hospitals, and the training of "native doctors", medical education has been developed step by step until we now possess medical colleges in the presidency-towns teaching and training men up to university standards on a par with those of other civilized countries. The instruction imparted in these colleges not only enables the educated youth of the country to satisfy the requirements of university examining boards in the country, but the college courses qualify for the examinations of corporations and universities in Great Britain, and ambitious youths are thus enabled to commence, and all but complete, their medical education in their own country; and subsequently, at a minimum of trouble and expense, place a coping stone thereon by means of obtaining a British diploma or degree. Not only so but the colleges provide competent teachers for the vernacular schools, which have been established throughout India, and the advantages of rational and syste-

matic medical education have through this agency been extended to the masses. The extent to which Government has profited by the educational services of its medical officers, which it is but right to say have hitherto always been warmly encouraged, needs no detailed description. In the Army, European and native, in civil stations, in hospitals and dispensaries everywhere, the official requirements and charitable enterprises of Government have been most fully and faithfully ministered to by the passed students of Indian medical colleges and schools. And the wants of the population have also been in very abundant measure satisfied by means of the services of a multitude of men who have systematically studied the human body and its diseases, and have been trained to habits of rational observation and thought, and taught the employment of rational methods of treatment. The time has now come when the State should place the stamp of legal recognition on such men (and this term must now include women as well) by means of some simple measure of medical registration. And it is necessary also, while recording thankfulness and praise for the past, to consider the future of medical education in this country, and how it can best be made to keep pace with the rapid advances of the age. Hitherto no difficulty has been experienced in obtaining from the ranks of the public services men competent by reason of education, talent, energy, and enthusiasm, to perform the duties of professors and teachers in medical colleges and schools. Teaching appointments possess both here and at home, strong attractions for

medical men, who recognise in these the best opportunities for fulfilling the highest functions of the profession to which they have devoted their lives. This spirit is not likely to weaken or wane, and this spirit it is which, we are firmly convinced, stimulates and supports the ambition which medical men have to obtain such offices, and it is a spirit which ought to be encouraged to the full. Medical education, as medical science and art expand, is becoming a more laborious and engrossing occupation. It is a noble work but it is also an arduous business, and it makes demands on a man's time and energies in a manner and to an extent which it is difficult to over-estimate. To possess an aptitude for instructing, to acquire the necessary knowledge and gain the art of instructing—these things come not by intuition but by labour and experience. And further, to reap the ever-ripening ears of growing knowledge, to sift the wheat from the chaff, to decide what to give, and what to withhold—these require patient study and deliberate thought. Moreover, the professor ought himself to be a student, to observe and investigate, to advance his subject, to originate and devise, to meditate and publish, to utilize his opportunities, to be a man not only of learning, experience and skill but of culture, and originality; and these are matters which necessitate devotion of life and time, and exclusion of petty distractions, interests and pursuits. And this brings us to the main object of our present contention which is that, looking to the present requirements of medical education, teachers ought to be relieved of all duties and employments which do

not directly and immediately bear upon their work. In England and the Colonies this desirable result is attained by engaging for the duties of his office the whole time of the incumbent.

With regard to certain subjects such as anatomy, chemistry and physiology, this arrangement is eminently advantageous, and this has been recognized in India. The time was when the professor of chemistry in Calcutta engaged in general practice, and when physiology was taught by a man encumbered with many other pursuits public and private. The professors of these important subjects are now enabled to devote their undivided time to teaching these branches theoretically and practically, except in so far as Government avails itself of their special knowledge for cognate purposes. But it is otherwise with the remaining chairs. Their occupiers have had imposed on them a multitude of petty and miscellaneous duties which have no direct relation to the subjects which they teach, and the remuneration connected with the chair has been adjusted so that the professors are compelled to engage in general practice for the purpose of earning a livelihood. The distinction between the general practitioner and the professor has become a very substantial one in Britain, and it is an eminently useful and convenient one. The latter mostly confines himself to consulting practice, which permits of his ordering his own time and reserving for the duties of his chair and for study and research as much leisure as he may consider requisite or desirable. This is the sort of arrangement which we should wish to see carried

out in India. It would be unjust to the public, official and non-official, to deprive them of the special skill in medicine, surgery, midwifery, and ophthalmology obtained by study and hospital practice by the professors of these subjects; but in India, as elsewhere, the distractions of general practice are inconsistent with that exclusive or predominant devotion to the work of teaching, which the vast extent and rapid growth of medical service now demand. Our contention is, in short, that the professors of medical colleges should be relieved of presidency surgeons' duties, and prohibited from engaging in general or family practice. Their services should be available to the public, official and non-official, in consultation as that term is understood in England—without fee of course in the case of Government officers,—and they should be permitted to undertake professional work, such as referee for insurance companies, university examiner, editor or correspondent of a medical journal, &c., &c., which could be performed during the hours of leisure to which every man is entitled. An arrangement of this sort would necessitate a considerable increase in the present scale of salaries, which was drawn up when the value of the rupee was considerably higher than it is, and the expenses of living considerably lower, and on the assumption that the permission to engage in general practice was of itself a substantial addition to the official pay. It would also necessitate a revision in part or in whole to the old system of separate presidency surgeons. This would undoubtedly add to the cost of medical services ;

but the added cost would be more than compensated by the increased efficiency of teaching, which would then constitute the whole, in place of as at present a fraction, of the official occupation of medical professors.

PRECIS OF OPERATIONS PERFORMED IN
THE WARDS OF THE SECOND SUR-
GEON, MEDICAL COLLEGE HOSPITAL,
DURING THE YEAR 1879.

By SURGEON-MAJOR K. McLEOD, A.M., M.D.,

Professor of Surgery, Calcutta Medical College.

In recent discussions which have taken place regarding the comparative merits of different methods of surgical treatment as affecting more particularly the success of surgical operations, two points have been indicated as specially desirable—first, the publication of surgical statistics and second, the elucidation of these by means of brief abstracts of cases. It has been urged that isolated cases or selected groups of cases are apt to lend support to contracted views and partial inferences, and that broad and true deductions can only be rightly drawn from wide inductions collected without reservation or bias.

It has, on the other hand, been remarked with truth and justice that the circumstances, etiological, hygienic and personal, affecting the issue of surgical cases and operations vary so much that a mere numerical statement without some detail or explanation is useless or worse. Several eminent surgeons have of late placed the results of their operative practice on record, and the system is likely to become more common. Two difficulties occur, however, on the threshold of any attempt of this kind. The first is, that no common classification of operations is followed. Without something of this kind a comparison of particular operations may be made, but a comparison of totals is impossible. The second difficulty consists in the detailing of cases, as it is by no means easy to steer clear of the Scylla of meagreness and the Charybdis of prolixity. Some reporters have given abstracts of all cases—brief abstracts of the less important and fuller details of the more important. Others have omitted the former and given notes only of the more interesting and grave. The first method appears to be the better of the two, holding the main object of the record in view, namely, to supplement

the figures by written descriptions. This is the plan which has been followed by Professor Spence of Edinburgh (vide *The Edinburgh Medical Journal*, Nov. and Dec. 1879), and he has striven to avoid both the dangers to which allusion has been made. As regards classification, if that laid down in the "Nomenclature of Diseases" were followed, though it is neither exhaustive nor perfect, a more accurate comparison of results would be possible.

In preparing this paper I have followed the classification in question as closely as possible, and have adopted Professor Spence's plan of giving details of all cases, short or long, according to their relative importance and the necessity of explanation. Every operation performed in the Second Surgeon's wards during the year has been included. These wards were under the charge of Surgeon-Major W. J. Palmer, M. D., during the first three months of the year, and under my own during the last nine. The details now published will give a good idea of the surgical practice of the Hospital and constitute the commencement of a series of similar reports which I hope to be able to prepare from year to year. Of some of the operations performed by Dr. Palmer I possess no personal knowledge. Others were handed over to me when I took over charge. Those performed by Dr. Palmer have been specially indicated. The following return represents the results of the year, and includes all the cases treated in which operations of any kind causing detention in hospital were found necessary :—

DESCRIPTION OF OPERATIONS.	Number of operations.	Died.
<i>I.—Operations on the eye and its appendages.</i>		
1. Excision of upper eyelid for malignant tumour,	1	0
2. For fistula lachrymalis and lachrymal obstruction,	1	0
3. Excision of the eyeball with the rest of the contents of the orbit,	1	0
Total,	3	0

DESCRIPTION OF OPERATIONS.		Number of operations.	Died.
<i>II.—Operations on arteries.</i>			
1. Ligature of temporal artery,	...	1	0
<i>III.—Operations on joints.</i>			
1. Dislocation of hip-joint reduced,	...	2	0
2. Compound dislocation of knee-joint reduced, ...	...	1	1
3. Extension of stiff joints	{ shoulder,	1	0
	{ elbow,	2	0
	{ knee,	3	0
4. Incision of knee-joint,	...	1	0
Total,		10	1
<i>IV.—Operations on bone.</i>			
1. Partial excision for necrosis,	...	3	0
<i>V.—Amputations:—A. For injury.</i>			
1. Primary, of the shoulder joint,	...	1	1
2. " of the forearm,	...	2	0
3. " of parts of the hand,	...	5	0
4. " of the thigh,	...	1	1
5. Secondary, of the arm,	...	1	0
6. For spreading traumatic gangrene, of the thigh,	...	1	1
<i>B. For disease.</i>			
7. For malignant disease, of the arm,	...	1	0
8. " " of the forearm,	...	1	0
9. For caries of tarsus, of the ankle (Syme's operation),	...	1	1
Total,		17	4
<i>VI.—Removal of Tumours:—A. Malignant.</i>			
1. Scirrhus of Mamma and axillary glands,	...	1	1
2. Epithelioma of penis,	...	3	0
3. " " thigh,	...	1	0
4. Sarcoma of neck,	...	2	1
5. " " lower jaw,	...	1	1
<i>B. Non-malignant.</i>			
6. Fibro-cartilaginous of cheek,	...	1	0
Carried over		9	3

DESCRIPTION OF OPERATIONS.				Number of operations.	Died.
	Brought forward	...	...	9	3
7.	Fibroma of lower jaw,	...	...	1	0
8.	Lipoma of cheek,	...	...	1	0
9.	" " thigh,	...	...	1	1
10.	Enlarged axillary glands,	...	...	1	0
11.	Vascular tumour of right eye-brow,	...	...	1	0
12.	" " " thigh,	...	...	1	0
13.	Elephantiasis of scrotum,	...	...	28	5
14.	" " labia,	...	...	2	2
15.	Cystic tumour of neck,	...	...	1	0
16.	Condyloma of anus,	...	...	1	0
17.	External and internal piles,...	...	...	2	0
18.	Polypus of rectum,	...	...	1	0
	Total	...	...	50	11
<i>VII.—Removal of foreign bodies.</i>					
1.	From nose,	...	...	2	0
2.	From pharynx,	...	...	2	0
	Total,	...	...	4	0
<i>VIII.—Removal of Calculi.</i>					
1.	Vesical, by lateral lithotomy,	...	...	2	0
2.	Do., by lithotripsy,	...	...	3	0
3.	Urethral, by urethrotomy,	...	...	1	0
	Total,	...	...	6	0
<i>IX.—Incisions.</i>					
1.	Tracheotomy	...	...	7	4
2.	For strangulated hernia—				
	(a.) with opening sac,	...	...	1	1
	(b.) without opening sac,	...	...	1	0
3.	For radical cure of hernia (Wood's operation),	...	...	3	0
4.	For atresia oris,	...	...	2	0
5.	For stricture of rectum,	...	...	1	0
6.	For Fistula in ano,	...	...	1	1
	Carried over,	...	...	16	6

DESCRIPTION OF OPERATIONS.			Number of operations.	Died.
Brought forward, ...			16	6
7.	For anal fissure,	...	1	0
8.	Perinaeal section,	...	3	2
9.	For large abscesses,	...	19	3
10.	For hæmatocele,	...	5	0
11.	For carbuncle, ...	...	2	0
Total, ...			46	11
<i>X.—Reparative operations.</i>				
1.	For cicatrix after burn of forearm and hand,	...	1	0
2.	For cicatrix after operation for scrotal elephantiasis, ...	...	1	0
3.	For hare-lip, ...	...	1	0
4.	For phimosis—circumcision,	...	2	0
5.	For hypospadias, ...	...	1	0
Total, ...			6	0
<i>XI.—Operations not classed.</i>				
1.	Hydrocele tapped and injected,	...	2	0
2.	Nerve-stretching, ...	...	3	1
Total, ...			5	1
Grand Total, ...			151	28

I shall now proceed to give a brief sketch of each of the cases included in the foregoing return. In drawing up these notes I have been greatly aided by Assistant-Surgeon NITAI CHARN HALDAR.

I. 1.—Excision of the upper eyelid for malignant tumour.—Hindu æt. 17. Growth of two years' duration; partially excised; chloride of zinc repeatedly applied; recurred; left hospital unrelieved. (Dr. Palmer.)

2. Operation for fistula lachrymalis and lachrymal obstruction.—A young Hindu woman was admitted for extensive necrosis of the frontal bone of syphilitic origin. This was treated successfully by the application of dilute hydrochloric

acid according to the plan recommended by Dr. Palmer. (Vide *Indian Medical Gazette*, October 1877.) The bone softened and crumbled down, and was replaced by healthy granulations which subsequently cicatrised. While under treatment an abscess formed in the lachrymal sac which was followed by lachrymal fistula. The canaliculus was slit and duct, which was found to be strictured, gradually dilated. The fistula was cured by this means.

3. *Excision of the eyeball with the rest of the contents of the orbit for glioma.*—Hindu male, æt. 4; seven months' duration, tumour of eyeball and behind it. Ball extirpated and orbit cleared out. Chloride of zinc (40 grains to 1 oz.) applied; wound dressed with boracic acid ointment spread on thin muslin. Healed up satisfactorily. Left hospital 23 days after operation.

II. 1.—*Ligature of temporal artery.*—A Manilla scaman, æt. 60, got a severe lacerated wound of his forehead by the fall of a plank on his head. Profuse arterial bleeding occurred which continued after his admission. A vessel was tied in the wound, but the bleeding continuing and the tissues being very pulpy, the anterior branch of the superficial temporal was cut down on and ligatured, which completely stayed the hæmorrhage. The wound healed up satisfactorily.

III. 1.—*Dislocation of hip-joint.*

(a.) A Mahomedan male, æt. 65, was knocked down by a bullock; the hip-joint was dislocated backwards, head of femur resting on dorsum ilii. Came to hospital a week after the accident. Dislocation reduced under chloroform by manipulation. The bone subsequently escaped from the acetabulum. (Dr. Palmer.)

(b.) Mahomedan boy, æt. 9, sustained dislocation of the head of the right femur into the sciatic notch about a month ago. Put under chloroform and the dislocation reduced by manipulation; the limb kept in position by splint and extension. There was slight prominence of the right trochanter major after reduction, but the shortening and inversion were corrected.

2. *Compound dislocation of knee-joint.*—A Hindu labourer, æt. 38, was brought to hospital on 12th November with

compound dislocation of right knee caused by a bag of wheat having fallen on his thigh. The condyles of the femur protruded through a transverse wound behind the joint and the posterior tibial pulsation could not be felt until reduction had been effected. This was done under chloroform by extension. The wound was syringed out with carbolic lotion, two drainage tubes inserted, the wound stitched, an antiseptic dressing applied and the limb kept at rest by a splint. Rum and beef-tea were given frequently and ice bags applied to the joint; temperature rose to 104.6° next morning. He had severe rigors and a pulse of 114. Drainage was free, and no accumulation took place in the joint. He was thirsty and feverish (103.6°) all day, and complaining of pain in the joint: discharge profuse. Symptom of collapse set in during the night, and prostration increased until he died of shock at $6\frac{1}{2}$ A. M. on the 14th. The discharge continued profuse, and was devoid of fœtor to the last.

3. *Extension of stiff joints.*

(a.) *Anchylosis of shoulder.*—Hindu male, æt. 16, had an abscess in the left pectoral region, which pointed in the axilla, 7 months ago. It was opened imperfectly, hence resulted in a sinus. There was burrowing of matter in all directions. The abscess was cured by means of free drainage and free incisions. During the course of treatment he had an attack of erysipelas which extended along the left arm and involved the whole of the trunk. The left arm was kept constantly at his side. He was treated at home, and applied at the hospital for relief on account of a stiff shoulder. The left shoulder joint was found ankylosed. The arm could be raised from the side to a slight extent, and could be moved backwards and forwards. No rotation could be accomplished. Under chloroform the joint was moved forcibly in almost every direction; in doing so grating was detected. The head of the humerus was separate from the shaft, but there was no displacement. By passive motion the movements were rendered free. Discharged after a month much relieved though the movements of the shoulder were not restored to their full extent.

(b.) *Anchylosis of elbow joint.*—An Ooria male, æt. 31, about a year and half ago sustained compound fracture of the left forearm and severe lacerated wounds of the same. These were produced by the teeth of a crocodile. Profuse suppuration and sloughing ensued, and bits of necrosed bones came away. He kept his forearm in a straight position, *i. e.* in a line with the arm. On admission the left elbow was found ankylosed. A few sinuses were situated in the middle of the forearm leading to necrosed bone. The muscles were partially destroyed. The fingers were very weak. Put under chloroform, the elbow was bent forcibly to less than a right angle. During the procedure the bones of the forearm gave way as the union was not very firm. The forearm was put up in splints. The joint was forcibly moved under chloroform on two more occasions. The sinuses healed up. The bones united firmly. The movements of joints were much freer. There was slight inflammation of the joint after each forcible movement. Discharged after 79 days.

(c.) Hindu girl æt. 9 (married). Had small-pox two months ago, followed by several symmetrical abscesses about the shoulders and elbows.

Both the elbows were stiffened, thickened and painful. A bit of the right acromion was found to be necrosed and was removed. The joints were forcibly moved under chloroform. Passive motion was afterwards regularly maintained. As the muscles were atrophied, they were stimulated by means of electricity. Discharged after 74 days, much improved.

(d.) *Anchylosis of knee-joint.*—Mahomedan youth æt. 20. Had small-pox six months ago; about a month afterwards two abscesses formed—one in each leg. The lower limbs were supported on pillows in a flexed condition. Since then the knees could not be stretched properly. Flexion of the knees complete; they could be extended to more than a right angle. The right knee freer in its movements than the left. The joints were completely stretched under chloroform and put up in McIntyre's splint. Gradual extension by the same splint has been tried without benefit. There was slight effusion into the joint which soon disappeared. After a month he was allowed to walk about. Then he was

subjected to another operation for the removal of bits of necrosed bone from left fibula and right radius. He was discharged almost completely cured in 75 days.

(e). Bengalee Brahmin, male, æt. 52. Had inflammation of right knee seven months ago, which was followed by ankylosis. The joint was bent almost at right angles. Slight flexion and extension could be produced by a little forcible movement.

He was put under chloroform and the joint stretched fully. The fibrous adhesions gave way. The limb was then put up in McIntyre's splint in a straight position. The patient was very nervous, and was discharged at his own request with a comparatively straight limb in two days.

(f). Mahomedan male æt. 40. Fifteen months ago he had a cut on the inner aspect of the left knee caused by an axe. Apparently the joint was laid open. There was suppuration in the joint as well as in the adjacent portions of thigh and leg. The wound healed up in four months, but the joint became ankylosed. It was fixed at an obtuse angle. Flexion and extension almost absent.

For a few days by means of elastic bandage and McIntyre's splint the limb was kept extended (very slightly). After a week, finding the result to be not very satisfactory, the joint was forcibly stretched under chloroform. The patient objected to undergo the pain necessary for his cure, and left the hospital in twelve days somewhat improved.

In addition to these cases the same plan of treatment, namely, forcible extension of stiff joints and liberation of adherent tendons under chloroform, was pursued in cases of compound fracture. The restoration of movement to the fingers in cases of thecal adhesion is a most satisfactory performance if forcible manipulation is resorted to while the adhesions are recent—as soon in fact as the inflammatory condition causing them has subsided. All such manœuvres are exquisitely painful, and should be invariably resorted to under chloroform, at any rate on the first two or three occasions. Case (c.) was one of several which came to hospital about the same time in which severe multiple abscesses followed attacks of small-pox. In two of them the abscesses were symmetrical; in one there had been epi-

physitis of both elbow joints affecting all the epiphyses connected with the joint. Sinuses led to surfaces of bare bone, and the joints felt like a bag of necrosed fragments. These sinuses closed up and recovery took place without resort to operation.

4. *Incision of knee-joint for suppurative synovitis.*—A Hindu youth æt. 18 years. Four years ago he had synovitis after prolonged walking—of the left knee only. Was cured by aspirating in this hospital. A second attack was cured by rest only. On admission the joint was considerably swollen; about 8 ounces of puriform fluid were drawn off by aspirator. Re-accumulation of fluid having taken place, an opening was made into the supra-patellar pouch with a knife under spray and about 4 ounces of pus let out. Dressed with carbolic gauze. This was done a month after his admission. The operation was followed by no constitutional disturbance. The dressings were changed every third or fourth day.

The discharge gradually diminished in quantity, the distension of the joint disappeared and he left the hospital after ten days with a stiff knee joint, but a serviceable limb.

IV.—Partial excisions for necrosis.

(a). *Lower jaw.*—Hindu male æt. 40. Fourteen months ago he had suppuration of the gums on the left side. A month afterwards a swelling appeared near the angle of the lower jaw on the same side; it burst and formed into a sinus. Another sinus formed soon after in the same situation. Both of them led to bare bone. Took mercury for rheumatism.

After admission the opening (lowermost) was enlarged and almost the whole of the left ramus of the lower jaw removed in pieces. The wound healed up by granulation. Discharged in 81 days cured.

(b.) *Radius and ulna.*—Hindu boy æt. 8. Fell from a height of about 20 feet; sustained compound fracture of lower end of left humerus, and also of radius and ulna of the same side a little above the wrist. The wound of the arm healed up without much difficulty. Necrosed pieces of radius and ulna about an inch in length removed about six weeks after the accident. Discharged with a stiff elbow after 164 days.

(c.) *Femur*.—Hindu male, æt. 30. Compound comminuted fracture, one month before admission, of lower third of femur. Lower fragment drawn behind and within upper, the end of which protruded through the skin outside of the knee-joint. Masses of dead femur removed, bone refractured and placed in better position. The wound was putrid on admission, and continued so after operation, though an attempt was made to render it aseptic.

Septic suppuration with severe constitutional disturbance set in which eventually implicated the knee-joint rendering amputation of the thigh necessary. This operation was recently performed by Dr. Raye under whose care the case came, and I understand that though the man was reduced to a state of extreme prostration before operation, he rallied to some extent but eventually succumbed having survived the amputation over a week.

V.—*Amputations*.—A. *For injury*.

1. *Primary of shoulder joint*.—Mahomedan male, æt. 32. Severe machinery accident. Right arm and forearm thoroughly smashed. Amputation (primary) at shoulder joint, flaps external and internal cut from without. Elastic cord did not command axillary sufficiently. A good deal of bleeding in consequence. Died of shock in two days.

2. *Primary of forearm*.—(a.) Hindu male, æt. 36; hand smashed by machinery; forearm lacerated and partially decorticated: primary amputation of forearm—middle—antiseptic. Recovered; discharged in 34 days.

(b.) Hindu female, æt. 36. Jute mill accident; wrist, hand and lower part of forearm completely smashed: primary amputation at middle of forearm. Recovered; discharged in 25 days.

Both these operations were performed under strict antiseptic precautions. Case (b) presented a typical antiseptic result—absence of inflammation, suppuration, putrefaction and constitutional disturbance and union of the flaps by first intention. In case (a) part of one of the flaps sloughed in consequence of original bruising, but the progress was satisfactory notwithstanding, and repair of the amputation wound rapid.

3. *Primary of parts of the hand.*—(a.) A native male, æt. 27, came in with smash of index, middle and right fingers and lacerated wound of the hand both on the dorsal and palmar aspects, and also of the thumb, its metacarpophalangeal joint being exposed. The ring finger was amputated through its middle phalanx; the middle finger through its metacarpophalangeal joint, and the index finger through the metacarpal bone. The operation was performed under chloroform, with antiseptic precautions. The result was satisfactory, and patient was discharged after 39 days with a stiff thumb.

(b.) A Hindustanee lad, æt. 10, while working with a straw-cutting machine, injured his hand. There was compound dislocation of the first phalanx of the index finger and second phalanx of the middle. Extensive laceration of the soft structures; a longitudinal lacerated wound on the ball of the thumb, the metacarpophalangeal joint being exposed.

The index and middle fingers were removed with the greater part of the metacarpal bones under chloroform. The thumb, ring and little fingers were saved. Discharged after two months with a useful hand.

(c.) A Mahomedan male, æt. 30. Right hand caught between the wheels of an oil-machine. The index finger almost entirely divided just at its middle, and its metacarpal bone fractured. The middle finger pulverised. The metacarpal bone of the ring finger was fractured, and there were lacerated wounds situated on the dorsal and palmar aspects of the hand communicating with the seat of fracture; slight cut on the finger.

The half of the index and whole of the middle fingers were removed under chloroform.

The patient absconded after a month, the wounds being quite superficial.

(d.) A Mahomedan adult male, æt. 26. The two distal phalanges of the index and middle fingers crushed by a machine. There was also a lacerated wound on the dorsum of the hand. The first phalanges of the fingers were saved. Discharged after 34 days with slight power over the stumps.

(e.) A Mahomedan adult, æt. 35. Thumb entangled in a

pulley and smashed. The phalanges removed under chloroform : is still under treatment.

4. *Primary of the thigh.*—Hindu female, æt. 40. Fell from a roof 22 ft. high. Colles' fracture of right wrist ; compound comminuted fracture of left femur ; fracture of lower jaw ; concussion. Amputation (primary) by modified circular method at lower third of thigh. Died in 3 days of exhaustion.

Full details of this case, which presented many points of special interest, will be found in the September (1879) number of the *Indian Medical Gazette*.

5. *Secondary of the arm.*—Hindu female, æt. 18. Fell into the fire a month before admission in a fit. Amputation through middle of arm. Recovered. Discharged in 51 days. (Dr. Palmer).

6. *For spreading traumatic gangrene.*—Hindu male, æt. 40. Sloughing ulcers of right foot, extending. History of syphilis, mercury, drink and opium. Left leg amputated a few years ago for similar condition. Syme's amputation performed ; gangrene set in (traumatic spreading.) Amputation above knee by long posterior and short anterior flap. Gangrene speedily supervened ; death in 3 days.

Amputations for disease.

7. *For malignant disease of the arm.*—Hindu male æt. 42. Severe burn of left arm and forearm at 6 years of age ; epithelioma commenced two years ago, involved periosteum of inner condyle and fascia covering origins of muscles. Amputation antiseptically of lower third of arm by modified circular plan. Healed by primary adhesion. Discharged in 18 days. This amputation pursued a typical antiseptic course notwithstanding that, owing to tight bandaging, the stump cavity became distended with venous blood, and it was necessary, on the third day, to open the wound and remove the clots which were creating tension and some constitutional disturbance ; these disappeared immediately on removal of the tension.

8. *For malignant disease of the forearm.*—Hindu male, æt. 50. Epithelioma of wrist following injury sustained one year ago. Amputation by modified circular plan at upper

third of forearm ; antiseptic ; primary union Discharged in 25 days.

9. *For caries of the tarsus*.—Hindu male, æt. 40 ; 2 years' duration : health bad. Extensive caries of tarsus and lower end of tibia and fibula. Syme's amputation ; died of pleurisy in six days.

Of the four fatal cases of amputation two died of the combined effects of the injuries sustained and operation performed. In the third, the operation was performed as a last resort in a man whose health had been shattered by dissipation, and who was suffering from delirium when the amputation was done. The fourth was also a bad subject, exhausted by long-continued disease. In none of the amputations did septicæmic symptoms arise, and those which were treated under strict antiseptic precautions recovered as rapidly as it is possible for amputations to recover.

VI. A. 1. *Scirrhus of mamma*.—Hindu female, æt. 40. One year's duration ; left axillary glands extensively diseased. Breast removed and glands extirpated. Died of pleurisy in five days. Antiseptically performed but became putrid.

2. *Epithelioma of penis*.

(a). Chinaman, æt. 60 ; 12 or 13 years' duration. Penis amputated, near pubis ; urethra stitched to skin. Recovered. Discharged in thirty days. (Dr. Palmer).

(b.) Hindu, æt. 25. ; one year's duration ; lateral skin flaps and corpus spongiosum divided $\frac{3}{4}$ inch longer than corpora cavernosa. Good result. Discharged in 37 days.

(c.) Hindu, æt. 45. ; 8 months' duration. Corpora cavernosa removed at root. Corpus spongiosum healthy, separated from corpora cavernosa ; brought out below testes about 2 inches in front of anus ; testes covered in by scrotum, which healed rapidly ; troublesome sinus behind them which continued to discharge an abun-

dance of foetid pus until patient left hospital. This sinus burrowed beneath the skin of the pubis, laying bare the bone ; the man got a severe attack of pneumonia, and was removed against advice by his friends in a weak and critical condition.

3. *Epithelioma of thigh*.—Hindu male, æt. 60. Right thigh ; burn 46 years ago. Ulcerated 30 years ago, and has been growing rapidly of late ; fascia lata slightly involved but not muscles ; removed with subjacent fascia ; wound 8 in. by 4. Cicatrised soundly. Discharged in 93 days.

4. *Sarcoma of neck*.

(a.) Hindu male, æt. 16 ; 9 months' duration, of glandular origin ; round-celled sarcoma attached to tranverse process of atlas. Removed antiseptically. Patient very restless ; putrefaction gained access to wound cavity ; died of pyæmia in nine days.

(b.) Hindu female, æt. 30 ; 5 or 6 years' duration, growing rapidly of late ; right side of neck beneath lower jaw. Removed by deep dissection. Recurred on two occasions. Second and third operations—one extirpating parotid gland. Recurred a fourth time ; nothing further could be done, and patient left hospital with the growth rapidly increasing in the cicatrix.

5. *Sarcoma of lower jaw*.—Hindu, æt. 45, of bad constitution ; five months' duration ; right half of lower jaw. Removed by incisions from angle of mouth and through middle of lower lip and chin ; found to have involved palate and fauces and spread along temporal and pterygoid muscles into temporal, zygomatic and pterygoid fossæ. Part of upper jaw removed. External carotid artery tied. Died of pneumonia in two days.

6. *Fibro-cartilaginous tumour of cheek*.—Mahomedan, æt. 32 ; 12 years' duration. Removed by single incision. Recovered. Discharged in 60 days. (Dr. Palmer):

7. *Fibroma of lower jaw*.—Hindu male, æt. 20 ; 2½ years'

duration. Left ramus and almost whole of body involved. Removed without difficulty ; two incisions made through middle of lower lip and angle of mouth. Body divided opposite right first bicuspid ; $\frac{3}{4}$ sub-periosteal disarticulation of left ramus. Satisfactory recovery. Discharged in 42 days.

8. *Lipoma of cheek*.—Hindu male, æt. 35 ; left side. Removed. Recovered. Discharged in 44 days, could not close left eye ; left with salivary fistula. (Dr. Palmer).

9. *Lipoma of thigh*.—Hindu male, æt. 12 ; 6 years' duration. Upper part of left thigh anteriorly ; weighed 6 lbs. Removed by single incision antiseptically : was doing well when tetanus supervened on 11th day ; died 18 days after operation.

10. *Enlarged axillary glands*.—Negro Sailor, æt. 28. Abscess on left side of chest two years ago ; burst ; necrosis of 5th rib detected ; sequestrum removed. Axillary glands began to enlarge six months ago, attained very large dimensions. All the glands in the axillary space removed antiseptically. Recovered. Discharged from hospital in 63 days after operation.

11. *Vascular tumour of right eyebrow*.—Hindu, æt. 16 ; right eyebrow ; 10 years' duration. Excised. Recovered. Discharged in ten days. (Dr. Palmer).

12. *Vascular tumour of thigh*.—East Indian, æt. 13. Congenital, size of a nut. Involved skin and fascia lata ; partially excised ; fundus ligatured ; done antiseptically. Recovered. Discharged from hospital with sound cicatrix and without a trace of the tumour in 30 days.

13. *Elephantiasis of the Scrotum*.

(a.) Hindu, æt. 40 ; 4 years' duration ; general health bad. Suppurative hæmatocoele on right side : laid open, and tunica, testicle and scrotum removed a few days afterwards ; weighed 2 lbs. Died in 9 days of tetanus. (Dr. Palmer).

(b.) Hindu, æt. 32 ; 2 years' duration. Preceded by hydrocele, which was tapped and injected 4 years ago ; general health good ; 8 lbs. Recovered. Discharged in 67 days. (Dr. Palmer).

(c.) Hindu, æt. 32 ; 6 months' duration ; general health good ; 1 lb. Recovered. Discharged in 48 days. (Dr. Palmer).

(d.) Hindu, æt. 37 ; 3 years' duration ; general health good ; 1 lb. Recovered. Discharged in 75 days. (Dr. Palmer).

(e.) Mahomedan, æt. 45 ; 3 years' duration ; general health bad ; 1 lb. Recovered. Discharged in 38 days. (Dr. Palmer).

(f.) Hindu, æt. 20 ; 4 years' duration ; general health good ; 1 lb. Recovered. (Dr. Palmer).

(g.) Hindu, æt. 34 ; 6 years' duration ; health good. Removed bloodlessly in the usual manner ; 11 lbs. 14 oz. Large hæmatocele on left side. Recovered. Discharged in 54 days. (Dr. Palmer).

(h.) Hindu, æt. 58 ; 15 or 16 years' duration ; general health indifferent ; arcus senilis. Right testicle removed ; cord slipped ; free venous hæmorrhage ; inguinal canal slit up ; bleeding point secured with difficulty ; died in 22 hours, of exhaustion ; no new bleeding. Large varicocele on right side ; granular kidneys.

(i.) Hindu, æt. 30 ; about 5 years' duration ; general health indifferent. There was urinary fistula in the penis ; weight 1 lb. 10 oz. Slight hydrocele of the right tunica. A drainage tube passed into the urethra. Prepuce of cartilaginous hardness. A few warty growths around the meatus. Recovered ; the fistula contracted. Discharged after 48 days. There was a history of syphilis.

(j.) A Madrassee, æt. 32 years. Duration 2 years. History of syphilis. Weight 2 lbs. Had a urinary fistula in penis. A tube was passed into the urethra. General health good. Recovered after 61 days.

(*k.*) A Hindustanee, æt. 40. Six months' duration. Ulceration at the root of the tumour. General health bad. Weight 2 lbs. Died six days after the operation of exhaustion.

(*l.*) Hindu, æt. 58. Hydrocele 15 years ago. The tumour began to grow a year and half ago; weight 10 ounces. On the 14th day of operation had erysipelas, which disappeared after 11 days. Recovered after 92 days. Had enlargement of spleen.

(*m.*) Hindu, æt. 29. Duration 2 years. Prepuce considerably hypertrophied. Weight 12 ounces. Washed with chloride of zinc lotion (40 grs to 1 oz.) The whole wound got covered with deep sloughs. The right testicle was destroyed. The left was quite loose at first, but became adherent after a few days. General health indifferent. Discharged after 96 days.

(*n.*) Hindu, æt. 32. Duration 9 years. Sloughing of the scrotum had occurred; both testicles protruding; looked anæmic; fairly nourished. Weight 12 ounces. Recovered after 84 days.

(*o.*) Hindu, æt. 25. Duration 4 years. Elephantoid thickening of mons veneris and lower part of the abdomen. A slight collection of fluid in the left tunica; weight 2 lbs. 8 oz. Had erysipelas on the 8th day of the operation; recovered after 15 days. Discharged after 64 days. The swelling of the pubis was much less.

(*p.*) A Hindustanee, æt. 50. Duration 15 years. Admitted with suppuration of the right tunica: weight 2 lbs. 8 oz. The right tunica thickened and contained purulent and sloughy material; had hæmorrhage from the wound; suffered from collapse for more than 24 hours. General health very good. Recovered after 73 days.

(*q.*) Hindu, æt. 40. Duration 2 years. Both legs swollen; general health good; no organic mischief; weight 3 lbs. 4 oz. Lost about 8 ounces of blood from inefficiency of the elastic cord; the right tunica

thickened and almost cartilaginous : the left one healthy. There were symptoms of prostration for a few days. Discharged after 79 days.

(*r.*) A Hindustanee, æt. 32. Duration 5 years ; general health good ; weight 5 lbs. 2 oz. Penis imbedded. On the 9th day of the operation there was erysipelatous redness over the abdomen. Had persistent hiccough, and died on the 14th day of the operation.

(*s.*) Hindu, æt. 23. Duration said to be one year and a half ; general health good ; weight 6 ounces. Hydrocele of right tunica. Cured in 54 days.

(*t.*) Hindu, æt. 32. Duration 5 years. Well nourished ; no organic complication. The tumour traversed by lymph channels ; weight 2 lbs. 9 oz. Testicles healthy. Discharged in 71 days.

(*u.*) East Indian, æt. 31. Duration 3 months. The scrotum had a mammillated appearance ; clear lymph containing filariæ came out in a stream on puncturing the lymph channels. Sound health ; no organic mischief ; weight 10 ounces. Cured in 79 days.

(*v.*) Hindu, æt. 27. Duration 8 years. Had stricture of the urethra and urinary fistulæ. Body not well nourished ; spleen slightly enlarged ; weight 1 lb. 1 oz. Had ischio rectal abscess, which was opened. Absconded after 64 days almost cured.

(*w.*) Mahomedan, æt. 31. Duration six years ; health bad. Had enlargement of spleen and liver (chronic), and chronic bronchitis. Was kept under tonic treatment for 44 days. Then the tumour was removed ; weight 8 lbs. 3 oz. A large hydrocele on the left side, a small one on the right. Had inflammation of the right cord (simulating erysipelas). Discharged after 78 days.

(*x.*) Mahomedan, æt. 35. Duration 5 years. Both legs thickened ; health good ; weight 7 lbs. 3 oz. Large hydrocele on the left side ; a small one on the right side. Discharged cured in 106 days.

(y.) Hindu, æt. 35. Duration 10 years ; health very good ; weight 2 lbs. 10 oz. Had hydrocele of both tunicæ which were cured by iodine injection. No collection of fluid in them. Discharged in 72 days.

(z.) A native, æt. 35. Duration 5 years ; health indifferent. Radial artery branched off very high up ; weight 2 lbs. 4 oz. Hydrocele on both sides. Recovered in 58 days.

(α.) Native, æt. 37. Duration 8 years ; countenance anæmic : not very well nourished ; weight 3 lbs. 2 oz. Hydrocele on the left side. The right tunica of cartilaginous hardness. On the 7th day of the operation had secondary hæmorrhage from the wound. Died on the 10th day exhausted.

(β.) Native, æt. 40. Duration not known by the patient. The growth had been rapid for five months. General health not good. Had chronic bronchitis. Weight 1 lb. 8 oz. Both tunicæ thickened. Recovered.

All these tumours were small. In fact the operation has become so well known and popular that patients now-at-days resort to the hospital for relief while the growth is small, and large tumours are rarely met with. The safety of the operation has been greatly enhanced by the use of Dr. Partridge's adaptation of Esmarch's elastic bandage and cord described in the *Indian Medical Gazette* for January 1875. The use of boracic ointment has also diminished risk by securing, when properly applied, almost complete asepsis. These large wounds do however become putrid notwithstanding the use of antiseptics, and 3 of the cases contracted erysipelas, of which one died. Of the remaining four fatal cases, one died of the effects of primary hæmorrhage from an immense varicocele which it was found difficult to ligature, and the other of secondary hæmorrhage ; the fourth died of tetanus, and the fifth of exhaustion. He was a feeble subject, as many victims of this disease are. The ciea-

trization of the wound occupies from 2 to 3 months as a rule. The skin covering both penis and testes was removed in every instance as experience has proved the necessity of this step to obviate recurrence.

14. *Elephantiasis of the Labia.*

(a.) Hindu female, æt. 24. One year's duration. Very delicate ; enlarged spleen. Tumour removed almost bloodlessly. Wounds were cicatrizing when she got an attack of erysipelas succeeded by peritonitis. Died in 21 days.

(b.) Hindu female, æt. 30, prostitute. Commenced a year ago ; history of syphilis. Labia majora and minora much hypertrophied. Polypoid masses springing from front and back wall of vagina ; urethra pushed back and enormously dilated. (Had evidently copulated through urethra.) All the masses removed. Was making a good recovery when she got a severe attack of erysipelas : was recovering from this when a relapse took place. Died of meningitis 49 days after the operation.

15. *Cystic tumour of neck.*—Hindu male, æt. 16 ; situated between hyoid bone and thyroid cartilage below skin ; 2 years' growth. Removed antiseptically. Recovered in 14 days. Linear cicatrix.

16. *Condyloma (anus).*—A Hindu female, æt. 25 years. The tubercles were noticed a month ago. There was a history of true syphilis and leucorrhœa. There were also two fissures. The growths were excised by a pair of scissors under chloroform and the sphincter divided for the fissure. Discharged cured after 36 days.

17. *Piles (internal and external).*

(a.) A Mahomedan male, æt. 29 years. History of piles for 3 months, and ulceration of the rectum after dysentery. There was also a fissure-like condition. Put under chloroform ; about 4 piles excised (internal and external.) The internal ones clamped, excised and cauterised. The

sphincter ani divided for fissure. Absconded after a fortnight.

(b.) A Hindu male, æt. 40. History of piles for about 18 years. There were masses of piles both internal and external. Was very anæmic on account of loss of blood from them. Under chloroform they were clamped, excised and then cauterised. The sphincter was divided to prevent subsequent contraction. The bleeding stopped, general health improved. Discharged after 50 days with slight contraction of the anus.

18. *Polypus (Rectum).*—An East Indian boy, æt. 3½. History of bleeding from the rectum for almost a year. On examination polypoid growths were detected about an inch above the anus. Put under chloroform; one as large as an almond was brought down with polypus forceps, seized with a clamp, and cauterised. Another gave way as it was being brought down. Not much bleeding. Discharged after 17 days cured.

VII. 1. *Foreign bodies removed from nose.*

1. Both cases were children, and the foreign bodies were easily removed by means of the scoop end of a director.

2. *Removal of foreign bodies from the pharynx.*—In one of these cases the foreign body was the vertebra of a fish, the transverse processes of which had pierced the aryteno-epiglottidean folds on each side. It was caught by the spinous process and removed.

VIII. 1.—*Lateral lithotomy.*

(a.) Hindu male, æt. 30. Symptoms of 1½ years' duration; lateral lithotomy; discharged well in 39 days. Uric calculus, weight 45 grains. (Dr. Palmer).

(b.) Jew, æt. 4. Symptoms of 2 years' duration. Lateral lithotomy. Weighed 90 grains. Recovered. Discharged in 31 days.

2. *Lithotrity.*

(a.) Mahomedan male, æt. 30. Lateral lithotomy performed a few years ago. Present symptoms recent. Crushing performed in two sittings. Recovered. Discharged in 4 days. (Dr. Palmer)

(b.) Ooria Hindu male, æt. 20 ; 8 months' duration. Small stone causing retention ; crushed. Recovered. Discharged in 6 days.

(c.) Hindu male, æt. 35. One year's duration. Crushed on six occasions. Discharged in 75 days.

3. *Urethrotomy.*—Symptoms of two days' duration. Two calculi extracted after incision into urethra. Catheter retained ; cystitis. Removed by friends after a month in a sinking state. (Dr. Palmer).

IX. 1.—*Tracheotomy.*

(a.) English sailor, æt. 25. Diphtheria. Died in 17 hours. (Dr. Palmer).

(b.) Hindu, æt. 26. Laryngitis of 4 days' duration. Recovered. Discharged in 91 days. (Dr. Palmer).

(c.) Hindu female, æt. 28. Laryngitis and œdema glottidis of 5 days' duration. Recovered. Discharged in 35 days.

(d.) Hindu female child, 13 months of age. Diphtheria of four days' duration. Operation rendered necessary by extreme dyspnœa. Died next day.

(e.) Hindu male, æt. 65. Œdema glottidis ; respiration ceased during operation and had to be re-established by Howard's direct method. Recovered. Discharged in 28 days.

(f.) Hindu male, æt. 35. Œdema glottidis 5 days ; great dyspnœa. Died of pneumonia in 2 days.

(g.) Hindu male, æt. 25. Sloughing sorethroat. Great dyspnœa. Died of acute bronchitis in one day.

2. *For strangulated hernia.*

(a.) *With opening sac.*—C. M., Manila seaman, æt. 45.

Hernia down for 31 hours. All the symptoms of strangulation and peritonitis; very low. Sac laid open; intestines gangrenous. No adhesion at neck of sac. Died in 6 hours.

(b.) *Without opening sac.*—Jew, æt. 60. Ruptured 50 years ago; down for 21 hours. Irreducible, tense, painful, distended with serum; symptoms of strangulation not extreme; taxis tried in vain with chloroform and ice. Herniotomy without opening sac; stricture at external ring. Recovered.

3. *For radical cure of hernia (Wood's operation).*

(a.) Mahomedan male, æt. 50. Ruptured 12 years ago. Right inguinal hernia. Been down for four days. No symptoms of strangulation. Reduced by taxis under chloroform; large hydrocele on the same side. Wood's operation performed antiseptically on two occasions. Effusion of lymph on 1st occasion moderate; hernia still descended on coughing or exertion. Success complete on second occasion. Interval between operations 45 days.

(b.) Irishman, æt. 35; 5 years' duration. Hernia about the size of an orange. Recovered. (Dr. Palmer).

(c.) Hindu male, æt. 39. Came in with hernia testis consequent on sloughing of scrotum caused by violent taxis. By careful strapping and dressing the testes were completely covered with skin. Wood's operation performed when wound healed, antiseptically. Abundant effusion; no suppuration. Discharged apparently quite cured one month after operation.

4. *For Atresia Oris.*

(a.) A native lad, æt. 8 years, was salivated for fever; sloughing of the right cheek, ulceration of the gums, and necrosis of the lower jaw followed. The jaws were completely tied down to each other by a cicatricial band, and an opening existed in the upper lip leading

to the mouth. The bands were divided under chloroform and the jaws kept apart. This was followed by a little improvement. Removed by his father after a fortnight before the completion of the treatment.

(b.) An East Indian girl, æt. 7, could hardly open her mouth after an attack of cancrum oris. The bands, which were situated on the right side, were divided under chloroform and the jaws were afterwards separated by means of gags. Discharged almost cured after a month and half.

5. *For stricture of rectum.*—A European infant, aged 12 months. Just after birth great abdominal distension was observed. After careful examination a small opening was found at the situation of the anus with a small nodule in front of it. The opening was enlarged by incision next day, and was dilated by wax bougies. Three months afterwards the child was subjected to a second cutting operation on account of contraction of the parts. During the subsequent treatment of the case fistulous communication between the urethra and rectum was established by rough probing (as was described by the mother of the patient). On admission a small opening admitting an ordinary index finger was seen in the situation of the anus. A crescentic fold of mucous membrane was situated on the posterior wall of the canal. Urine escaped freely through the so-called anus, and fæcal matter through the urethra. The child had to strain very much during defæcation.

He was put under chloroform; the anal aperture enlarged posteriorly, and then the crescentic band was divided completely. The rectum was pulled down and its edges stitched to the lips of the wound with silk ligature. Within a few days the end of the alimentary canal became adherent to the skin wound. No contraction followed, and the patient was discharged after 52 days. Circumcision was performed for congenital phimosis.

The urethral fistula continued open.

6. *For Fistula in ano.*—The patient contracted erysipelas during treatment and died of that disease.

7. *For anal fissure.*—A Japanese male, æt. 30, came in for fissure of the superficial layer of the sphincter which was divided without chloroform. Discharged after 17 days cured.

8. *Perinæal section.*

(a.) Hindu, æt. 26. Old stricture; retention for 4 days. Bladder distended to navel; extravasation; drowsy; urethra divided without staff and Syme's catheter entered into bladder: died in a few hours. (Dr. Palmer).

(b.) Hindu, æt. 25. History of stricture and perinæal fistula. Some urine discharged through rectum and perinæum. Catheterised before admission; several false passages, large abscess in perinæo. Cock's operation; died in five days of uræmia. Catheter had been passed into rectum (!) before admission; perinæum and prostate riddled with false passages. The section was perfectly correct, the urethra being opened in the middle line and just in front of prostate.

(c.) Mahomedan male, æt. 45. Severe symptoms of bladder inflammation; suspicion of encysted calculus. Cut; no stone found. Great relief after operation. Discharged cured in 30 days.

9. *Large Abscesses. (A.) Iliac.*

(a.) East Indian girl, æt. 5; fall 6 days ago, followed by abscess on right side, opened above Poupart's ligament. Died of septicæmia in 7 days. (Dr. Palmer).

(b.) Hindu male, æt. 45. One and half months' duration. Opened antiseptically below Poupart's ligament. Discharged cured in 44 days.

(c.) Hindu male, æt. 21. 2 months' duration, pointing

above Poupart's ligament. Opened antiseptically at this point. Recovered. Discharged in 70 days.

(d.) Hindu male, æt 12. One month. Opened beneath Poupart's ligament antiseptically; good recovery. Discharged in 26 days.

The three last cases remained aseptic throughout and made excellent recoveries.

(B.) *Ischio-rectal.*

(a.) Hindu male, æt. 24. Admitted with a large ischio-rectal abscess of 12 days' duration. It burst of itself after admission as a catheter was being passed for the relief of his bladder. The opening was enlarged, and the sphincter divided; dressed with carbolic oil and lint. The cavity extended upwards along the rectum backwards to the sacrum and forwards into the perinæum. On the 27th day had an attack of erysipelas which disappeared after a fortnight. Discharged perfectly cured after 86 days. (Dr. Palmer).

(b.) Hindustanee male, æt. 30. Had an inflammatory swelling in the right ischio-rectal region. The abscess resulting from it extended to the other side of the rectum which was thus encircled. Laid open freely; 4 ounces of fœtid pus let out. The sphincter divided. Dressed with cotton and carbolic oil. Discharged cured after a month.

(c.) Hindu male, æt. 27. Had symptoms of abscess about the rectum 10 days ago. It was quite small and encroached more into the perinæum than backwards. Treated in the same way. Discharged cured after a month.

(C.) *Of back.*

An East Indian girl, æt. 14 years. There was a history of fall 9 days ago from a height of about 4 feet, which was followed by a swelling in the back. On admission the bladder was relieved of about two and half pints of urine; no signs of paralysis of limbs. A

large abscess was situated on the back, which was opened under spray (under chloroform) and about 3 ounces of healthy pus let out. Discharged after 84 days. Had enlarged spleen.

(D.) *Of right side.*

Native male, æt. 26. Had a swelling in the right side with fever and inflammatory symptoms. It turned into abscess. The matter burrowed along the inter-muscular planes of the abdomen and passed through the external abdominal ring into the scrotum. Here a small opening formed, through which matter discharged freely, after a fortnight. The abscess, which was situated just below the costal arch, was laid open freely. A large slough (probably the whole of the internal oblique muscle) was drawn out through the opening. Drainage tubes put in. Is still in the hospital; doing well.

(E.) *Fæcal.*

(a.) A stout Punjabi Mahomedan, æt. 40, was admitted with a lumbar abscess of a fortnight's duration. The iliac fossa was swollen and fluctuating. The abscess was opened antiseptically beneath Poupart's ligament. The pus was extremely foetid. Diffuse cellulitis extended beneath the skin of the thigh in all directions. The patient lived for 44 days. The opening continued to discharge very offensive matter with a distinct foetid odour. Diarrhoea and prostration were the immediate precursors of death. A communication with the cæcum was found after death through the appendix vermiformis, and the body of the ilium was bare and infiltrated with gangrenous pus.

(b.) A middle-aged lascar was taken ill about a month before admission with fever and pain in the right inguinal region where a swelling formed. He had passed pus per rectum a few days before he came to hospital. A

globular swelling to the right of the linea alba and below the level of the umbilicus was found to contain pus, and was laid open. The discharge was fæculent. He fell into a state of prostration with diarrhœa, and died in about two months. A large aperture of cômunication with the cœcum was found. The abscess cavity and interior of the bowel showed large polypoid masses of fibrinous lymph impregnated with fæculent matter.

(F.) *Gluteal.*

(a.) A native male, æt. 30 years. A large abscess extending from the crest of the ilium to below the trochanter major. About two pints of pus let out. There was profuse discharge which was all along sweet. Dressed almost every day with carbolic gauze. The whole thickness of the ala of the ilium necrosed and was absorbed. After a long struggle the patient was cured and left the hospital with stiffness of the knee and hip of the same side, after about 8 months. The cavity was kept aseptic throughout.

(b.) Native male, aged 28 years. Came in with a large gluteal abscess situated between the gluteal muscles. At first opened under spray and about six ounces of pus let out. Sinuses burrowed in all direction, and the patient died of chronic dysentery after 3 months. Dressed with carbolic oil. (Dr. Palmer).

(G.) *Of thigh.*

(a.) An East Indian male, æt. 14. First appeared 17 days ago. It was situated in the upper part of the thigh underneath the vessels. An incision was made on the inner side of the thigh on the adductor brevis and the director and finger carried along the inter-muscular space. About 5 ounces of laudable pus let out. Dressed under antiseptic precautions. Discharged after 54 days cured. Had severe constitutional disturbance and asthma.

(b.) A Mahomedan male, æt. 20. Had inflammation of one finger resulting in necrosis of last phalanx about a fortnight ago. Abscess of the thigh formed about a week ago. It was situated close to the femur. About an ounce of pus let out under spray; the discharge was fœtid next day. The cavity filled up without any complication. Another (axillary) abscess formed and was opened by the same method. Discharged after 40 days.

(c.) Native male, æt. 45. Commenced 15 days ago. Situated on the inner aspect of the thigh at about its middle. About 8 ounces of pus let out. Dressed with carbolic gauze under spray. Discharged cured after 2 months. The limb was put up in splint.

(d.) Native male, æt. 50. Duration 20 days. After fever. It burst of itself, and about 15 ounces of thin whitish fluid flowed out. Dressed with carbolic gauze after injecting the cavity. Had troublesome sinuses which were not cured until rest was secured by means of splint. Discharged after 4 months and half.

(e.) Ooria female, æt. 35. Large abscess of thigh above the knee. History of injury a fortnight before. Opened under chloroform and under spray; pus about 5 ounces. Discharged cured after 38 days.

(H.) *Of ankle.*

East Indian, æt. 24. Had severe inflammation of the left leg and foot; collections of matter formed about the ankle which were opened under chloroform. Communication existed between the abscess cavity and the joint. Altogether 4 incisions were made. Discharged cured after 65 days with a stiff ankle joint.

These abscesses were of such magnitude, were situated in such important neighbourhoods, or required such elaborate manipulations for opening and treating them, that I have included them in the list of operations. It is extraordinary how natives of Bengal, whose consti-

tutions are depressed by fever, syphilis or mercury, run into pus. Stripping and infiltration of bone are very common in these huge abscesses. If putrefaction gains access into the abscess cavity, dysentery and fatal exhaustion are a very common result. Under antiseptic management, with attention to the general health, rapid repair takes place, and even when bone has been involved, recovery though slower is certain, the bone becoming molecularly disintegrated and absorbed as in case (*F, a*) where the finger could be passed through the ala of the ilium from without into the iliac fossa.

10. *For Hæmatocele.*

(*a.*) A Scotch sailor, æt. 40. Duration about 14 years. Commenced without any apparent cause except constant labour. Put under chloroform, a portion of the right thickened tunica excised and clots removed. Recovered after severe constitutional disturbance in 67 days. (Dr. Palmer).

(*b.*) Hindu male, æt. 41. History of injury 5 years ago. For one month pain had increased with fever. On incision under chloroform a few ounces of pus let out. The cavity communicated with that of the tunica, and also extended outside it. A large mass of half decolorised clot scooped out. Cured in 35 days.

(*c.*) An East Indian, æt. 27. Duration according to his statement one month. No history of injury. The tunica was laid open freely under chloroform, and was thickened to about $\frac{1}{4}$ inch. A portion of it excised. The edges of the wound brought together by stitches and horsehair used for drainage. Had severe inflammation of the part and great constitutional disturbance. Discharged perfectly cured after 64 days.

(*d.*) Hindu male, æt. 25. Native of North-west. Commenced to grow 12 years ago. Was quiet for a long time. Had become uncomfortable for about 4 months.

The scrotum as large as a cocoanut. The right tunica, which was thickened, was laid open freely and clots removed. The hydrocele of the left testicle was tapped a few days afterwards, in order to relieve tension and prevent eaping. A swelling appeared which led to a suspicion of iliac abscess. It subsided without any unpleasant symptom. Was discharged cured after 2 months. Operation performed under chloroform.

(*e.*) Native, æt. 26. Commenced 7 years ago. No history of injury. Large as a cocoanut. Laid open freely : clots removed. Tunica not excised. Is still under treatment. Profuse suppuration and sloughing. Performed under chloroform.

Most cases of hæmatocele met with in this country have been preceded by hydrocele, the tunica from injury or degeneration getting filled with blood, which is found in various stages of disintegration, and I have found it best simply to lay open freely the sac, not to excise any portion of it however degenerated. The thickened tunica acts as a sort of splint, keeping the testicle in position and preventing the occurrence of hernia testis. The tunica becomes absorbed and a satisfactory cure ensues. Antiseptic treatment by means of boracic ointment spread on gauze is of great value.

11. *For Carbuncle.*

(*a.*) A European merchant, æt. 73 years. Had had an inflammatory swelling in the back for about 20 days, which was lanced slightly by a medical man. Large crucial incision made through the swelling ; the vertical one measuring 5 or 6 inches. Recovered without any complication, and was discharged after 63 days. No sugar in his urine. Had bad health previous to this complaint.

(*b*) A Hindu male, æt. 48. Commenced about a fortnight ago with fever ; occupied almost the whole of the dorsal region. Freely incised under chloroform by

the crucial method ; this was followed by free bleeding which had to be stopped by the application of Tr. Ferri. Discharged cured after 44 days. There was loss of skin from sloughing. Skin grafts took very well, and hastened the cure.

Both these cases made a rapid and satisfactory recovery under free incision. The morbid process was at once stayed and the constitutional symptoms improved from the moment that the tension, which was great, was relieved.

X. 1. *For cicatrix after burn.*—Hindu male, æt. 16. Right hand and forearm burnt severely 12 years ago ; thumb bound to forearm by very tight cicatricial band which was divided transversely. Wound stitched longitudinally. Recovered, with a hand greatly improved in appearance and usefulness.

2. *For cicatrix after operation for scrotal tumour.*—Hindu male, æt. 30 years. About a year ago was operated on for scrotal tumour in this hospital. Was discharged with a small ulcer at the junction of the penis with the scrotum. This cicatrising caused adhesion of the scrotum with almost the whole length of the penis.

The cicatrix was divided under chloroform and under antiseptic precautions. The lips of the wound were stitched up from side to side. It healed without any formation of pus, and the patient was discharged after 28 days perfectly satisfied with the result of the operation.

3. *For Harelip.*—European boy, æt. 5 years ; single harelip left side. The edges of the cleft were pared and brought together by a harelip pin. Discharged after 10 days with partial obliteration of the cleft. He was operated on again with better success. (Dr. Palmer).

4. *Phimosis.*

(a.) East Indian, æt. 18. There was a history of gonorrhœa a month ago and chancre two weeks afterwards. On admission a suppurating bubo was detected

in the left groin. The prepuce was thickened and phimosed and covered with warty growths. There was also purulent discharge from the urethra.

He was circumcised under chloroform ; no stitches put in. The bubo was opened and dressed with cotton and oil. He was discharged cured after 77 days.

(b.) Native Christian, æt. 12 ; came in with congenital phimosis ; circumcised in the usual way. The prepuce was grasped between the blades of forceps opposite to corona glandis. The glans pushed up and the prepuce divided with curved bistoury in front of the forceps. The line of incision directed from above downwards and slightly forwards. The mucous membrane was slit up and reflected, and then stitched with the surrounding skin with horsehair at three points. Dressed with boracic gauze. Result very satisfactory. Left hospital in 15 days.

XI. 1. *Hydrocele tapped and injected*.—These two cases presented the usual features and result.

5. *Hypospadias*.—Hindu, æt. 21. Traumatic stricture, impermeable, near point of penis ; fistula behind on lower aspect of penis. Plastic operation performed ; failed. Patient would not retain tube, and urine got between lips of wound and caused its separation. Would not submit to second operation.

2. *Nerve-stretching*.

1. Hindu male, æt. 45 ; tingling of left hand and arm six months before admission succeeded by anæsthesia of ring and little fingers and ulnar side of hand and forearm ; wasting of muscles and bullæ. Ulnar nerve much thickened ; stretched above elbow. Sensation restored and muscular power improved. Discharged in 23 days.

2. I. B., æt. 40, Station master. Foot crushed by a trolley some time ago ; numbness, tingling in 3 outer toes, and muscular weakness of whole foot. Ext. popliteal nerve stretched. Left in 16 days much relieved.

3. Hindu male, æt. 30. Right thumb smashed ; sloughed off ; tetanus supervened on 13th day. Median nerve stretched on 18th day. No benefit. Died on 24th day after injury, 9 days after tetanus, and 6 days after nerve stretching.

GENERAL REMARKS.

The death rate of the cases included in the foregoing table, &c., amounts to 18·5 per cent. This rate is comparable only with a table constructed on the same principles and including the same description of cases. It might be raised slightly by adding two or three cases which were removed from the hospital in a precarious condition, or lowered a little by removing cases where the fatal event did not result from the operation performed, such as the fatal cases of tracheotomy, the case of nerve-stretching for tetanus, &c. A general death rate in surgical operations is an extremely loose and uncertain figure. The rate now given will be useful for comparison with future rates calculated on the same principles and by the same method. The figures relating to particular operations together with the descriptions are of more value for purposes of general comparison, and this value will increase as the induction is widened from year to year.

It will be observed that several of the fatal events were due to erysipelas and septic disease. 10 cases of erysipelas occurred in these wards during the year, and four of these proved fatal. Not one of the cases treated under the strict antiseptic system contracted the disease, though they occupied the same wards at the time the disease was prevailing. Five of the cases occurred in patients from whom scrotal and labial tumours had been removed. These patients remain for weeks under treatment with granulating wounds which from their situation cannot be kept quite pure. Efforts were made to segregate and isolate the affected patients as much as possible.

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PRECIS OF OPERATIONS PERFORMED IN THE WARDS OF THE FIRST SURGEON, MEDICAL COLLEGE HOSPITAL, DURING THE YEAR 1880.

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In preparing the following paper I have closely followed the plan pursued in detailing the results of operative surgery in the Second Surgeon's wards in 1879 (*Vide* "Indian Medical Gazette," No. XV., pages 92 & 123). The hygienic circumstances of the two series of wards correspond very closely, and in no appreciable respect does the one differ from the other; nor is there any difference between the class of patients treated in the two; patients requiring in-door treatment being admitted into each on alternate days and on alternate Sundays. The number of available beds in each is 60, of which 19 are allotted to Christian males (Europeans, Eurasians, Native Christians and others consuming miscellaneous food), 29 to native males (Mahomedans and Hindus indifferently), 8 to native females and 4 to Christian females.

The materials from which this paper has been prepared were collected and put into shape by my assistant, GOPAL CHUNDER CHATTERJEE, M.B., to whom I am deeply indebted for the unwearied industry and great intelligence with which he has aided me in the operating theatre and wards, and in recording and compiling notes of cases. To him is largely due any success which has been obtained during the year in carrying out the anti-

septic system, whose principles and methods he thoroughly understood and conscientiously practised.

The following return includes all cases in which operations were performed during the year, tabulated according to the system adopted in the previous paper :—

DESCRIPTION OF OPERATIONS.		Number of operations	Died.
<i>I.—Operations on arteries.</i>			
1.	Ligature of femoral for aneurism ...	1	0
<i>II.—Operations on joints.</i>			
1.	Reduction of dislocation of shoulder joint ...	1	0
2.	Extension of stiff joints, { elbow ...	1	0
		1	0
3.	Incision of knee-joint ...	1	0
4.	Excision of elbow-joint ...	1	1
	—,,— hip-joint ...	1	1
Total ...		6	2
<i>III.—Operations on bones.</i>			
1.	Partial excision for necrosis		
	(a.) frontal bone ...	1	0
	(b.) lower jaw ...	1	0
	(c.) humerus ...	1	0
	(d.) ulna ...	2	0
	(e.) tibia ...	2	0
	(f.) tarsus ...	3	0
Total ...		10	0

DESCRIPTION OF OPERATIONS.		Number of operations.	Died.
<i>IV.—Amputations.</i>			
<i>A. For Injury.</i>			
1.	Primary, of the shoulder joint ...	1	0
2.	„ of the arm ...	1	0
3.	„ of the forearm ...	1	0
4.	„ of the ring and middle fingers ...	1	0
5.	„ of the leg ...	1	0
6.	Secondary, of the arm, for gangrene ...	1	0
7.	„ of the thigh, ditto ...	1	0
<i>B. For Disease.</i>			
8.	For sarcoma of arm—of the shoulder joint ...	1	0
9.	For sarcoma of forearm—of the arm ...	1	0
10.	For caries of tibia and tarsus—of the thigh ...	1	0
11.	For disorganization of knee-joint—of the thigh ...	1	0
12.	For aneurism—of the thigh ...	1	0
13.	For caries of tarsus,—of the ankle (Syme) ...	1	0
Total ...		13	0
<i>V.—Removal of tumours (By excision.)</i>			
<i>A. Malignant.</i>			
1.	Scirrhus of mamma and axillary glands ...	2	0
2a.	Epithelioma (a.) of cheek ...	2	1
	„ (b.) scalp ...	1	0
	„ (c.) penis ...	1	0
3.	Sarcoma of back ...	2	0
<i>B. Non-malignant.</i>			
4.	Fibroma (a.) of back... ...	1	0
	„ (b.) of mamma ...	1	0
5.	Exostosis of femur ...	1	0
6.	Osteoma of lower jaw ...	1	1
7.	Osteo-cystoma of lower jaw ...	2	0

DESCRIPTION OF OPERATIONS.			Number of operations.	Died.
8.	Cartilaginous tumour of nose ...	...	1	0
	" of sub-maxillary gland...	...	1	0
9.	Dermoid cyst of check ...	...	1	0
	Sebaceous cyst of scalp ...	...	1	0
10.	Elephantiasis (a.) of prepuce ...	...	2	0
	(b.) of scrotum ...	...	26	4
	(c.) of labia ...	...	1	0
11.	External and internal piles ...	...	6	0
12.	Condyloma (a.) of anus ...	...	1	0
	(b.) of labium ...	...	1	0
13.	Axillary hæmatoma ...	...	1	0
14.	Bronchocele ...	...	1	0
Total ...			57	6
<i>V.—Removal of calculi.</i>				
1.	Vesical, by lateral lithotomy ...	...	8	2
<i>VI.—Incisions.</i>				
1.	Tracheotomy ...	...	2	2
2.	For strangulated hernia ...	...	3	1
	(a.) with opening sac ...	...	3	1
3.	For radical cure of hernia (Wood's operation) ...	...	11	1
4.	For atresia oris ...	...	2	0
5.	For fistula in ano ...	...	2	0
6.	For anal fissure ...	...	2	0
7.	Perinæal section ...	...	4	0
8.	For large abscesses ...	...	22	4
9.	For hydrocele ...	...	4	0
10.	For hæmatocle ...	...	3	0
Total ...			55	8

DESCRIPTION OF OPERATIONS.			Number of operations.	Died.
<i>VII.—Reparative operations.</i>				
1.	For cicatrix after operation for scrotal tumour	... ..	2	0
2.	For urinary fistula	... ..	1	0
3.	For Epispadias	... ..	1	0
4.	For talipes varus	... ..	4	0
5.	For phimosis—circumcision	... ..	5	0
Total			13	0
<i>VIII.—Operations not classed.</i>				
1.	Hydrocele tapped and injected	... ..	1	0
2.	Nerve splitting	... ..	3	0
3.	Nerve stretching	... ..	1	0
Total			5	0
Grand total			168	18

I shall now record a brief detail of each of the cases included in the foregoing return, pursuing the order in which they have been tabulated, and offering such comments on individual cases or groups of cases as may appear desirable.

I. 1.—Ligature of the femoral artery for popliteal aneurism.—A Hindu male, æt. 25, with a history of syphilis, was admitted on 14th May with a pulsating swelling in left popliteal space, of 2 months' duration. The tumour was large, soft and fluctuating; pulsation stopped on pressing femoral artery; distinct bruit audible; knee semi-flexed; ankle œdematous; general health fair. The femoral was ligatured with catgut on the 17th May

at the apex of Searpa's triangle ; operation performed antiseptically ; pulsation ceased instantly and did not recur ; wound healed by first intention, and was completely cicatrized on 28th May. Tension of tumour subsided, but no consolidation of contents took place. A blister formed on the most prominent part of its surface. This was succeeded by a small sphacelus which was being removed by cicatrization beneath, when on 9th July oozing of blood was detected. This became freer ; the aneurismal sac was laid open and an attempt was made to secure the vessel above and below, but welling still taking place, amputation was performed. The result of this operation is given below. The sac was found on dissection to be principally composed of the surrounding tissues, and to contain a small quantity of firm clot and a large quantity of fluid blood undergoing disorganization. The cavity was perfectly sweet, though it had been practically in contact with dead material for weeks. The slough included the wall of the aneurism at a minute point when the escape of blood had taken place. It was perfectly aseptic. The operation was successful as far as permanent occlusion of the artery was concerned, but this measure failed to procure consolidation of the aneurism which was very large and practically diffuse.

II. 1. Reduction of dislocation of shoulder joint.—Hindu male, æt. 43 ; one month's duration ; caused by a fall. Reduced by traction under chloroform by means of pulleys ; slight synovitis followed which subsided, and the resulting stiffness was remedied by passive movements.

2. (a.) *Extension of stiff elbow.*—Hindu male, æt. 20 ; elbow stiff, bent at an angle of 30. Forcefully extended under chloroform, followed by frequent passive movement. Left hospital in 33 days greatly improved.

(b.) *Extension of stiff knee.*—Eurasian male, æt. 14. Bent knee consequent on a recent wound in popliteal

space. Extended gradually by MacIntyre's splint. Left hospital in 9 days with a straight and flexible joint.

3. *Incision of knee-joint.*—Eurasian female, æt. 43. Elephantiasis of both legs. Numerous abscesses of right leg; knee-joint inflamed and became filled with pus. It was laid open antiseptically and drainage tubes inserted; these were gradually shortened and the sinus finally closed, leaving a straight and stiff joint. The abscesses of the leg were also treated successfully, and the swelling went down considerably in consequence of the supuration.

4. (a). *Resection of elbow joint.*—Hindu male, æt. 49. Admitted for stricture of urethra and fistula in ano. His general health was bad. A large abscess suddenly formed above right elbow, stripping the humerus extensively and involving the joint, which became disorganized. Resection was performed on 23rd January; about $3\frac{1}{2}$ inches of humerus had to be removed. The wound putrefied; patient suffered from diarrhœa; but rallied and was progressing favourably when acute peritonitis set in and killed him in three days. He survived the operation 28 days. The humerus was found stripped to the extent of an inch and its medulla inflamed.

(b.) *Resection of hip-joint.*—A Hindu child, æt. 2 years, admitted 11th August 1879; sustained a fall two months before admission. A fluctuating swelling existed, and was opened; two other openings had subsequently to be made to evacuate matter. The joint was found to be disorganized and femur dislocated on dorsum. The acetabulum was perforated and an abscess formed in the right iliac fossa; fever of a hectic type existed. After a long period of treatment by drainage, feeding, cod-liver oil, Iodide of Iron, &c., excision of the joint was performed on 14th July 1880; a transverse incision was made behind the joint, the periosteum was detached and the head of the femur was removed

through the trochanter major. The acetabulum was scraped by an osteotrite. For several weeks progress was favourable, the wound was almost closed, and the general health improved, when fever and diarrhœa set in ; the granulation material broke down, the end of the bone was again exposed. Discharge became profuse, symptoms of tubercle appeared in the apex of the left lung, and the patient finally died of exhaustion on the 12th of August—69 days after the operation.

III. 1. *Partial excisions for necrosis.*

(a.) *Frontal bone.*—Hebrew male, æt. 30. Syphilitic necrosis of frontal bone. Sinus slit open and sequestrum removed. Wound cicatrized soundly after nearly 8 months' treatment.

(b.) *Lower jaw.*—Hindu male, æt. 20. Sinus of right cheek leading to necrosed alveolar process holding two loose dead teeth ; necrosed teeth and bone removed and edges of sinus brought together. A severe attack of facial erysipelas followed. The wound became sloughy and gaped. Recovery took place, and he eventually left hospital with a sound jaw and contracted sinus.

(c.) *Humerus.*—Hindu male, æt. 35. History of syphilis ; admitted with sinus of left shoulder leading to dead bone. Sequestrum, which consisted of the greater part of the head of the humerus, was removed and patient left hospital in two and a half months with a depressed cicatrix and somewhat impaired movements of the shoulder joint.

(d.) *Ulna.*—i. Hindu male, æt. 32. Death of a large portion of the right ulna consequent on compound fracture. Sequestrum 4 inches long removed. Discharged in 37 days with wound soundly healed but rather impaired movements of the hand.

ii. Native Christian female, æt. 36. History of abscess two months before admission. Sinus laid open ; several

dead bits of left ulna removed ; wound healed up in 54 days.

(e.) *Tibia*.—i. Mahomedan male, æt. 20 ; two and a half years' duration, consequent on abscess. Sequestrum was removed from lower end of right tibia and wound healed soundly in 87 days. Ankle joint a little stiff.

ii. Hindu male, æt. 22. Caused by abscess thirteen months ago. Sequestrum removed from lower end of left tibia ; wound cicatrized in 139 days.

(f.) *Tarsus*.—i. Armenian female, æt. 40 ; one and a half year's duration. Idiopathic inflammation resulting in abscess. Several sinuses of left foot leading to bare bone ; carious bones (scaphoid, internal cuneiform and base of 1st metatarsal) removed. Cavity filled up very slowly. Left hospital eventually in $7\frac{1}{2}$ months with a soundly cicatrized wound and able to walk.

ii. Male Hindu, æt. 38 ; disease of 18 months' duration ; contusion followed by abscess. Four sinuses of right foot leading to bare bone. Incisions made along inner and outer borders of foot ; periosteum detached ; scaphoid, cuboid, three cuneiforms and bases of metatarsal bones removed (P. H. Watson's operation.) The wound filled up but a sinus remained, and bare bone being still detected amputation at the ankle joint was performed $3\frac{1}{2}$ months after resection.

iii. Hindu male, æt. 35. Disease of 6 months' duration, caused by injury. Internal cuneiform and tarsal end of 1st metatarsal bone removed. Healed up soundly in 55 days.

All these operations were performed bloodlessly, subperiosteally and antiseptically. The cloacæ were enlarged by chisel, and the cavities and sinuses thoroughly scraped out with scoop and osteotrite. A strong solution of Chloride of zinc (40 grs. to ℥i) was applied ; a layer of boracic gauze invaginated into the wound and stuffed with carbolic gauze. A large dressing of the latter

included all. The cavity under this treatment fills up kindly with granulation material which organizes and cicatrizes. The process is necessarily protracted. Partial resections of the tarsus are not favourably viewed by some authorities. In two cases perfect repair resulted ; in the third caries re-appeared in the remaining bones. In no case, though the surrounding bone was freely divided and seraped, did any symptom of osteo-myelitis appear.

IV. *Amputations for injury.*

1. *Primary amputation of the shoulder joint.*—Male Mahomedan, æt. 13. Sustained a severe laceration of right arm in the machinery of a jute mill a few hours before admission. An Esmarch's cord was wound tightly round the shoulder and kept in position by tapes fastened on the opposite side. The remains of the arm were taken off at the shoulder joint. Anterior and posterior flaps were cut ; the latter larger. Little or no blood was lost, and strict antiseptic precautions were employed. Suppuration took place and partial sloughing of posterior flap from bruising. A good stump eventually resulted. The wound healed partly by first intention and partly by granulation. There was no constitutional disturbance beyond the shock and reactive fever. Patient left hospital 90 days after the operation.

2. *Primary amputation of the arm.*—Hindu male, æt. 28 ; machine accident. Sustained also lacerated wound of right leg. Arm removed before admission a few inches below shoulder joint. Flaps a good deal bruised and torn ; sloughed partially, exposing end of bone ; wound healed by granulation. No necrosis. Left hospital with a sound stump in 74 days. Amputation wound became septic for a time. Wound of leg remained aseptic and healed kindly and rapidly.

3. *Primary amputation of the forearm.*—Mahomedan male, æt. 14. Bitten by a horse 5 hours before admission.

Right forearm completely crushed. Amputation performed at junction of upper and middle thirds bloodlessly and antiseptically. Catgut threads used for drainage secured by catgut loops to deepest part of wound. Stitches removed and wound healed soundly in 10 days. No constitutional disturbance of any kind, nor local inflammation or suppuration. Left hospital 26 days after operation.

4. *Primary amputation of ring and middle fingers.*—Hindu male, æt. 18. Machine accident; wound sloughy and putrid. Ring and middle fingers removed at metacarpophalangeal joints. Healed by granulation. Putrefaction extirpated; left hospital in 30 days.

5. *Primary amputation of the leg.*—Mahomedan male, æt. 34. Right leg crushed by fall of a bale of jute. Amputated at seat of election by modified circular plan. Wound putrefied; flaps sloughed; some secondary hæmorrhage occurred; suffered from severe constitutional disturbance; sloughs separated; remains of posterior flap dragged over end of bone. Satisfactory stump resulted in three months.

6. *Secondary amputation of arm (for gangrene).*—Hindu male, æt. 12. Fell from a mango tree 11 days before admission, and broke right forearm, which mortified. Line of demarcation had formed. Amputated at junction of middle and lower thirds by modified circular method, bloodlessly and antiseptically. Catgut drain used; wound healed up in 6 days and stump became round and solid in 3 weeks; no constitutional or local disturbance. Discharged 20 days after operation.

7. *Secondary amputation of the thigh (for gangrene.)*—Hindu male, æt. 22. Fell off a palm tree some days before admission and broke his left leg. Gangrene set in. There was a line of demarcation below the knee on admission. Putrid suppuration occurred in the knee-joint and constitutional disturbance was severe. Carden's ampu-

tation was performed and the supra-patellar pouch, which had become greatly distended, was thoroughly scraped and washed out with a solution of Chloride of zinc (40 grs. to an ounce). Notwithstanding strict antiseptic treatment the wound putrefied, suppurated and sloughed to a slight extent. It was nearly healed in 6 weeks when secondary hæmorrhage from the popliteal artery occurred, for which the femoral artery was tied with catgut below Hunter's canal. This wound healed readily under antiseptic treatment. There was no return of bleeding, and patient left hospital with a sound stump 72 days after operation.

Amputations for disease.

8. *Amputation at shoulder joint for Sarcoma of arm.*—Hindu male, æt. 19; 8 months' duration, 16 inches in circumference. Amputation through shoulder joint by external and internal oval flaps. Esmarch's cord used as in No. 1. Operation performed under strict antiseptic precautions. No secondary fever; wound remained sweet and healed for most part by first intention. Discharged 32 days after operation.

9. *Amputation of the arm for Sarcoma of forearm.*—Hindu female, aged $2\frac{1}{2}$ years. Disease of 11 months' duration; whole of the right forearm from elbow to wrist involved. Amputation by modified circular plan at lower third of arm bloodlessly and antiseptically; catgut drain used. Treated as an out-door patient. Dressed on 2nd, 4th, 7th, 10th and 14th day; wound remained sweet and united throughout by first intention. Very little constitutional disturbance.

10. *Amputation of thigh for caries of tibia and tarsus.*—Hindu male, æt. 46. Had suffered for years from disease of bones of right leg and foot, causing profuse discharge and great prostration. Leg atrophied; general health very low. Carden's amputation performed bloodlessly and antiseptically. Caoutchouc tubes used for

drainage. Constitutional disturbance after operation mild ; wound healed soundly in 24 days ; general health improved greatly. Discharged 79 days after operation.

11. *Amputation of thigh for disorganization of the knee-joint.*—Hindu male, æt. 38. Disease of 8 years' duration. Joint semi-flexed, grated on movement. Abscesses formed external to it. Suffered from fever of a low type (hectic); knee-joint filled with putrid pus. Amputation performed at middle of thigh by lateral flaps (to avoid putrid abscesses and sinuses) bloodlessly and antiseptically; inner flap larger. Caoutchouc tubes used for drainage; wound remained sweet, and healed mostly by first intention: considerable shock and reactive fever: general health improved rapidly. Patient left hospital 77 days after operation with a sound stump and in good health and condition.

12. *Amputation of thigh for open aneurism.*—Male Hindu, æt. 25; circumstances necessitating amputation explained above (I. 1.) Amputation at lower third of thigh by antero-posterior flaps cut from without and circular division of muscles; wound putrefied; small exfoliations came off end of femur. Left hospital 146 days after the amputation with a sound stump.

13. *Syme's amputation at the ankle for caries of tarsus.*—Hindu male, æt. 38. Resection of the tarsus had been performed (Vide III. 1. *f. ii.*), the amputation was done on 20th May. Suppuration took place in the stump cavity leading to sinuses which required repeated incision, and healed very slowly. The stump is now (18th March, 1881) quite sound, and patient is about to leave hospital. The stump is movable and very callous.

Cases 3, 6, 8, 9, are good examples of what may be obtained by strict antiseptic treatment, namely, rapid repair without constitutional disturbance or local inflammation. In cases 3, 6 and 9 the merit of catgut as a means of drainage is very satisfactorily demons-

trated. In the remaining cases repair was delayed from various causes. In none was there any serious cause of anxiety regarding the ultimate result. In all antiseptics were used to prevent or extirpate putrefaction, and there can be little doubt that the success which was obtained—a success unprecedented in the Medical College Hospital—was largely if not mainly due to the careful employment of antiseptic precautions and appliances.

Removal of Tumours.

V. A. 1. *Scirrhus of mamma and axillary glands.*—(a.) East Indian female, æt. 40; fifteen months' duration. Left mamma removed antiseptically; lymphatic glands thoroughly removed from axilla. Part of lower flap sloughed. Portion of wound healed by first intention, remainder by granulation. Discharged with sound cicatrix in 76 days.

(b.) Hindu female, æt. 45; two and a half years' duration. Last child 16 years old. Right mamma with skin covering it thoroughly extirpated. Axilla cleared of glands and an enlarged and indurated gland above clavicle also removed through axilla. Operation performed antiseptically, followed by severe shock, succeeded by reaction. No absorptive fever. Discharged with sound cicatrix in 50 days. [The axillary vein was temporarily ligatured in this case to prevent venous bleeding. The ligature was subsequently removed; no harm followed.]

2. *Epithelioma of cheek.*—(a.) Hindu male, æt. 39. Disease of 4 months' duration. Extensive infiltration and perforation of the cheek. It became necessary to remove the left half of the lower jaw, part of the upper, the sub-maxillary gland and three cancerous cervical glands. Patient never rallied from the shock of the operation, and died next day.

(b.) Hindu female, æt. 40; disease of two months'

duration. Villous growth on inside of the right cheek ; skin covering it infiltrated. Parotid gland indurated and enlarged ; tumour excised. Hæmorrhage controlled by round œsophagus forceps closed above and below the growth. Parotid entirely extirpated, its deep connections having been previously tied by strong catgut threads ; wound of cheek healed by first intention and remainder by granulation. Atresia prevented by use of Smith's gag. Left hospital in 60 days with sound cicatrix ; very little facial paralysis, and no sign of return of disease.

(b.) *Epithelioma of scalp*.—Mahomedan male, æt. 40 ; eight years' growth. Tumour had been excised 2 years previously in the Mitford Hospital. Situated on vertex, three inches diameter. Removed antiseptically with a ring of healthy skin ; skull stripped of periosteum to the extent of a rupee. Remained sweet. Healed by granulation ; no constitutional disturbance. Soundly cicatrized in 72 days.

(c.) *Epithelioma of penis*.—Hindu male, æt. 29 ; disease of one and a half years' duration, consequent on phimosis ; skin divided circularly ; corpus spongiosum left longer than corpora cavernosa and stitched at lower angle of wound. Bleeding stopped by stitching corpora cavernosa with catgut. Result satisfactory. Left hospital in 32 days.

3. *Sarcoma of back* —(a). Hindu female, æt. 20 ; admitted 30th January. Large hemispherical tumour of one year's growth on centre of back, caused by injury. Removed antiseptically by single incision. Left hospital with sound linear cicatrix in 46 days.

(b.) Re-admitted on 18th September. Tumour re-appeared 1½ month ago. Three distinct masses existed in neighbourhood of former cicatrix. They were removed with a liberal margin of surrounding skin and tissue under antiseptic precautions. Wound healed by granulation. Discharged in 94 days with sound cicatrix.

A small growth appeared in the track of one of the button stitches which attained the size of a marble. Has not been heard of since she left hospital.

4. (a.) *Fibroma of back*.—Hindu male, æt. 45 ; of 25 years' duration ; size of a cocoanut situated over lumbar spine. Rapid growth within three years ; acutely painful latterly. Removed antiseptically by single incision ; deep attachments ligatured by catgut before division. Healed by first intention without suppuration : no secondary fever. Discharged in 27 days.

(b.) *Fibroma of mamma*.—Hindu female, æt. 20. Pendulous tumour of right breast ; extensive sloughing of skin had taken place on anterior aspect. No disease of axillary glands. Removed by elliptical incision. Wound healed by granulation. Discharged with sound cicatrix in 55 days. Tumour found to be a fibroma.

5. *Exostosis of femur*.—Hindu male, æt. 25. Growth situated on inner side of lower end of left femur ; of 15 years' duration ; originally started by a blow from a hammer ; about the size of a large orange and pedunculated. Removed antiseptically by chisel and hammer. An abscess formed beneath the extensor muscles which had to be opened. Both wound and abscess remained aseptic. Discharged well in 41 days.

6. *Osteoma of lower jaw*.—Hindu male, æt. 40. Growth of 11 years' duration ; involved left half of lower jaw ; as large as a fist ; jaw divided at symphysis and across upper part of ramus. Sub-maxillary gland which was infiltrated also removed. Skin divided over lower margin of jaw ; lower lip left intact. Wound inflamed. Septic fever and secondary hæmorrhage occurred in third week. Suppurative periostitis of right half of lower jaw ; parotitis and pleurisy supervened and death took place from pyæmia 21 days after the operation.

7. *Osteo-cystoma of lower jaw*.—(a.) Hindu female, æt. 25. Tumour of right side of lower jaw, of two

years' duration ; jaw divided at symphysis and below coronoid process ; mucous membrane stitched with catgut and edges of skin wound brought together by iron wire and horsehair stitches. Drained by caoutchouc tube. Wound healed by first intention ; very slight constitutional disturbance. Left hospital 20 days after operation.

(b.) Hindu male, æt. 32. Tumour of two years' duration ; as large as a foetal head ; situated on left side. Jaw removed from symphysis to coronoid process ; mucous membrane stitched with catgut ; drainage tube introduced. Healed partly by first intention ; wound inflamed and diffuse cellulitis occurred in its neighbourhood. Patient became insane and remained so for about a week. Left hospital in good health, mental and bodily, in 42 days with the wound soundly repaired.

8. (a.) *Enchondroma of nose*.—Hindu male, æt. 32 ; eight months' duration ; size of a large potato. Excised by straight incision, found to spring from cartilage of septum, which was divided ; wound gaped at lower part and secondary operation became necessary. Left hospital in 43 days with a somewhat flattened nose.

(b.) *Cartilaginous tumour of left sub-maxillary gland*.—Hindu male, æt. 40. Swelling noticed three months ago. Sub-maxillary gland removed, its deep attachments being tied before division with catgut. Dissection deep and difficult. Wound healed by first intention. Left hospital in 29 days.

10. (a.) *Dermoid cyst of cheek*.—Eurasian male, æt. 20 ; growth of 3 years' duration ; size of pigeon's egg. Enucleated antiseptically ; catgut drain used. Healed by first intention. Discharged in 11 days.

(b.) *Sebaceous cyst of scalp*.—Hindu male, æt. 19. Congenital, situated over anterior fontanel ; size of an orange. Opened antiseptically ; emptied. Lining wall

scraped and drainage tube inserted. Collapsed and healed. Discharged in 32 days with some induration remaining in site of tumour.

10. (a).—*Elephantiasis of prepuce.*

i. Hindu male, æt. 32. Phimosi from childhood, paraphimosis for 5 months, causing elephantoid swelling of the prepuce beyond the constriction. This was removed; the wound healed by granulation, and patient was discharged in 24 days.

ii. Hindu male, æt. 20. Hard chancre two months ago; partial circumcision $1\frac{1}{2}$ month ago. Portion of prepuce left behind had undergone great elephantoid thickening. It was excised, and patient was discharged in 32 days with a sound soft cicatrix above the corona glandis.

(b).—*Elephantiasis of scrotum.*

i. Hindu, æt. 48; 12 years' growth; enormous tumour; general health fair; addicted to drink. Excised bloodlessly; 85 vessels tied; very little shock; secondary hæmorrhage 9th, 10th and 11th days. Diarrhœa, vomiting and exhaustion. Died 15 days after operation; tumour weighed 96lbs.

ii. Hindu, æt. 28; 4 years' duration. Excised bloodlessly; hydrocele on both sides; 35 vessels tied. Wound suppurated, suffered a good deal from fever. Discharged in 82 days. Weight 12oz.

iii. Hindu, æt. 55; 25 years' duration. Hydrocele of left testicle. Removed bloodlessly, 36 vessels tied. Wound putrefied: fever for 10 days; left hospital in 76 days. Weight 8lbs. 8oz.

iv. Hindu, æt. 36; 4 years' duration. Small hydrocele on both sides. Excised bloodlessly; 35 ligatures used; wound putrefied. Suffered from hiccup for two days. Had a good deal of fever. Discharged in 80 days. Weight 1lb. 5oz.

v. Eurasian, æt. 32 ; 4 years' duration. Has also elephantiasis of right leg. General health good. Removed in the usual way. Hydrocele of both testes. The operation was followed by severe sloughing cellulitis of the abdominal wall and gluteal region, accompanied by fever of a low type. Free incisions were required. Recovery eventually took. Left hospital in good health with wound soundly cicatrized in 108 days.

vi. Hindu, æt. 40 ; 17 years' duration ; general health good. Removed in the usual way ; tunica adherent. 40 ligatures used. Progress satisfactory. Discharged in 38 days. Weighed 4lbs.

vii. Hindu, æt. 40 ; 5 years' duration ; history of injury ; no venereal disease ; health good. Removed in the usual way. Double hydrocele ; testes stitched with catgut to each other and to edge of wound. Dressed antiseptically. Putrefied, became aseptic in 4 weeks. Discharged in 65 days. Weighed 3lbs. 2oz.

viii. Mahomedan, æt. 45 ; 9 years' duration ; spleen and liver enlarged and right leg elephantoid. Removed in the usual way. A little fluid in both tunicæ ; testes stitched as in No. vii. Dressed antiseptically under the spray ; wound putrefied and suppurated ; secondary hæmorrhage. Sinus formed behind and between testes ; suffered much from fever ; wound eventually became sweet and cicatrized. Discharged in 85 days. Weighed 3lbs. 4oz.

ix. Mahomedan, æt. 32 ; 5 years' duration ; fever and enlarged spleen. Removed and dressed as in Case viii. Remained aseptic ; no suppuration ; dressings changed daily for a fortnight, then less frequently. Discharged in 67 days. Weighed 1lb. 3oz.

x. Hindu, æt. 50 ; 8 years' duration. History of gonorrhœa and syphilis ; health good. Removed under spray as in Case viii. Fluid in left tunica ; right adherent ; skin freed laterally and brought over testes. No putre-

faction, inflammation or fever. Discharged in 62 days. Weighed 2lbs. 2oz.

xi. Hindu, æt. 35 ; 2 years' duration. History of hydrocele, phimosis and chancre. Operation as in Case x. Secondary hæmorrhage on second day. Wound putrefied. Secondary fever. Discharged in 70 days. Weighed 1lb. 6oz.

xii. Hindu, æt. 25 ; 4 years' duration. History of hydrocele, fever and chancre. Operation as in Case x. ; hydrocele of right testicle. Wound remained sweet and healed kindly without suppuration. Discharged in 73 days. Weight 2lbs. 6oz.

xiii. Hindu, æt. 30 ; 8 years' duration. History of hydrocele and sloughing of left scrotum ; hydrocele of right side. Removed under strict antiseptic precautions ; flaps cut from thighs ; testes stitched to each other and to surface of perinæal wound : flaps brought together over them. Remained sweet ; very little fever. Discharged in 70 days. Weighed 6lbs. 2½oz.

xiv. Hindu, æt. 25 ; 5 months' duration. Operation as in Case xiii. Wound remained aseptic. Discharged in 74 days. Weighed 7oz.

xv. Hindu, æt. 35 ; 13 years' duration. History of hydrocele. Operation as in Case xiii. Double hydrocele. No putrefaction, inflammation, suppuration or fever. Discharged in 63 days. Weighed 9lbs. 12oz.

xvi. Hindu, æt. 20 ; 5 years' duration. Operation as in Case xiii. Putrefied on 4th day. Suffered from erysipelas and fever. Wound subsequently became aseptic. Discharged in 65 days. Weighed 6oz.

xvii. Mahomedan, æt. 32 ; 4 years' duration. History of fever and hydrocele. Slight enlargement of spleen and liver. Operation as in Case xiii. Wound putrefied in second week, and became aseptic in about 17 days. Discharged in 72 days. Weighed 1lb. 9oz.

xviii. Hindu, æt. 32 ; 3 years' duration. Lymph scro-

tum. Scrotum removed antiseptically ; testes stitched as in xiii. ; lateral flaps brought over them and stitched together with catgut ; penis healthy, not decorticated. Wound remained sweet and was healing kindly ; got lymphangitis of both arms on 7th day, and pleurisy on 13th. Died 14 days after operation of pleurisy and pericarditis. Weighed 11oz.

xix. Hindu, æt. 34 ; 4 years' duration. Health good. Operation as in Case xiii. Hæmatocele of left tunica. Temporary putrefaction from 4th to 15th day. Flaps adhered and wound granulated satisfactorily. Discharged in 72 days. Weighed 2lbs. 11oz.

xx. Hindu, æt. 25 ; 2 years' duration. Health good. Operation as in Case xiii. Double hydrocele. Wound putrefied ; suffered from fever, dysentery and cutaneous erysipelas. Wound eventually healed kindly and flaps retained their vitality and formed a good covering for the testes. Discharged in 75 days. Weighed 1lb. 11oz.

xxi. Hindu, æt. 25 ; 10 months' duration. History of gonorrhœa and chancre. Health good ; operation as in Case xiii. Secondary hæmorrhage and putrefaction occurred, accompanied by high fever ; suffered also from bronchitis. Wound subsequently rendered aseptic. Discharged in 67 days. Weighed 6oz.

xxii. Mahomedan, æt. 20 ; 4 years' duration. General health bad ; ulcer on scrotum and elephantiasis of both legs. Operation as in Case xiii. Hydrocele of right tunica. Wound putrefied on 5th day. Secondary hæmorrhage on two occasions. Wound became aseptic in a week. Suffered from fever and got sloughing dysentery which carried him off in 7 days. Wound nearly healed. Died 32 days after operation. Weighed 4lbs. 4ozs.

xxiii. Hindu, æt. 40 ; 5 years' duration. General health good ; very fat. Operation as in Case xiii. Rallied badly. Secondary hæmorrhage within 24 hours, succeeded by obstinate vomiting ; flaps inflamed on 3rd day,

and were covered with bullæ. Got high fever and died of exhaustion 3 days after operation. Weighed 5lbs. 11oz.

xxiv. Hindu, æt. 25 ; 8 years' duration. Health good. Operation as in Case xiii, Double hydrocele. Discharged in 73 days. Weighed 4lbs. 14oz.

xxv. Hindu. æt. 40 ; 8 years' duration. History of syphilis. Oblique reducible inguinal hernia on right side. Operation as in Case xiii. Wood's operation performed after removal of tumour ; wire removed in 10 days. Large hydrocele on left side. Wound granulated and cicatrized slowly. Hernia recurred. Discharged in 89 days with a truss. Weighed 1lb. 15oz.

xxvi. European, æt. 48 ; 4 years' duration. History of gonorrhœa and phimosis. General health good ; addicted to drink. Removed bloodlessly but not antiseptically. Hydrocele of left tunica. Wound putrefied and suppurated. Discharged in 120 days. Weighed 1lb. 3oz.

The treatment pursued in these cases varied somewhat. Cases i.—vi. and xxvi. were operated on and dressed in the manner described in last year's precis. The tumour was removed without antiseptic precautions, and no effort was made to attach the testes to each other or to the surface of the perinæal wound, nor to cover them with skin. The dressing consisted of Boracic gauze next the wound, lint steeped in Carbolic oil (1 in 10) over it, and a layer of cotton wool secured by a suspensory bandage outside.

Excluding Case i., which was a gigantic tumour, and which proved fatal 14 days after operation from secondary hæmorrhage and gastro-enteric irritation, the average weight of the tumours was 2lbs. 9oz., and the average period of detention in hospital 84 days. In all the cases secondary fever was severe, and in one an attack of sloughing cellulitis of great intensity occurred. In these cases the lateral lips of the wound were kept

apart to prevent their inversion and give room for the testes by means of stitches attached to tapes passed round the thighs, as recommended by Professor Partridge.

In the second series including cases vii.—ix. the testes were stitched to each other and to the margins of the wound by catgut. The parts were washed with Carbolic lotion and the wound covered with Boracic gauze, outside of which layers of Carbolic gauze were placed instead of lint. The average weight of the tumours in these cases was 2lbs. 8oz., and the average period of detention in hospital 72 days. Only one of these cases remained aseptic, but they all recovered satisfactorily.

In the third series x.—xii. the operation was performed under strict antiseptic precautions, the parts being washed with a 1 in 20 Carbolic lotion, the Carbolic spray used throughout the operation, the testes secured as in the last series, and similar dressings applied.

The average weight was 1lb. 15oz., and average period of detention 68 days. Two remained sweet throughout. In the third case there was secondary hæmorrhage, and the wound putrefied. In the cases which remained aseptic there was an entire absence of suppuration and secondary fever. In the fourth series, in addition to the steps detailed above, rectangular flaps were cut from the side of the thighs and transplanted to cover the testes, the edges being brought together as closely as possible by a continuous catgut suture; this series includes cases xiii.—xxv. The average weight was 2lbs. 15oz., and the average period of detention 72 days. Three of these cases died—one of pleurisy and pericarditis 14 days after the operation, which supervened upon lymphangitis of both arms, and adenitis in both axillæ. A similar sequence is mentioned in Billroth's Surgical Pathology, 4th Ed., page 351. The wound, which remained aseptic, was in process of satisfactory repair. The second death occurred in consequence of sloughing dysentery,

which supervened 25 days after operation, when the wound was nearly healed, and ended fatally in 7 days. The third death was caused by sloughing cellulitis which originated in the cords, and rapidly affected the flaps and neighbourhood of the wound; death occurred in 3 days.

Of the ten remaining cases one-half remained aseptic, and the other half underwent temporary putrefaction. This fact attests the great difficulty which is experienced in keeping these large wounds, which are situated close to sources of putrefaction, free from septic contamination. In these five, however, the aseptic condition was restored by the diligent use of iodine and boracic acid. The five aseptic cases undoubtedly underwent repair more comfortably and rapidly than the others, and constitutional disturbance was slight or wanting. In one of them the complication of right oblique inguinal hernia existed. This was treated at the time of removal of the scrotal tumour by Wood's operation, which proved effective during the period of cicatrization. The hernia however descended afterwards. Of the five septic cases, one suffered from high fever and cutaneous erysipelas, another from both these complications and dysentery in addition, and a third from fever and bronchitis.

On the whole the experience of the year justifies the following conclusions:—

1. That it is possible in a large proportion to carry out the antiseptic system thoroughly in these operations.
2. That when it succeeds there is a great saving of suffering in addition to the absence of stench.
3. That the stitching of the testes to each other, and to the surface of the wound, is a great improvement in the subsequent management of such cases, and
4. That the cutting of lateral flaps from the thighs facilitates materially the process of repair.

The death-rate amounted to 15·4 per cent. of cases

against 17·8 in 1879. The average weight of the tumours (excluding No 1, which was exceptional) was 2lbs. 11oz., and the average duration of treatment of those that recovered 75 days. All the cases were retained until cicatrization was completed, but the last part of the process is frequently protracted, and patients might be discharged a week or two earlier without risk or discomfort.

(c.) *Elephantiasis of labia*.—Hindu female, æt. 30 ; 12 years' duration. History of ulcers on labia and suppurating bubos ; salivated thrice. General health indifferent ; spleen enlarged. Both labia enormously hypertrophied, forming large pendulous tumours. A third existed between them corresponding to the position of the clitoris. All these removed simultaneously. Bleeding prevented by preliminary ligature of pedicle with whipcord. Dressed with Boracic ointment spread on gauze : catheter retained. Healed slowly by granulation. Result satisfactory. Discharged 96 days after operation. Weighed 7lbs 10oz.

11. *Excision of piles*.—(a.) Hindu female, æt. 25. External piles and fissure ; former cut off and latter divided. Discharged well in 18 days.

(b.) Hindu male, æt. 40. Internal bleeding piles ; clamped, cut off by scissors and cauterised. Recovered in 20 days.

(c.) Armenian male, æt. 24. External piles and fissure ; former cut off and latter divided. Left hospital well in 28 days.

(d.) Eurasian male, æt. 22. Internal bleeding piles ; clamped, cut off by scissors and cauterised. Cured in 11 days.

(e.) Hindu male, æt. 23. Internal bleeding piles very anæmic ; venous murmur in neck. Clamped, removed by scissors and cauterised. Discharged in 30 days with wounds healed and general health greatly improved.

(f.) English male, æt. 38. Internal and external piles ; former bled. Clamped, removed by scissors and cauterised. Left hospital in 19 days.

12.—(a.) *Condyloma of anus*.—Hindu male, æt. 8. History of hereditary syphilis ; removed by scissors. Discharged well in 25 days.

(b.) *Condyloma of labium*.—Hindu female, æt. 27 ; 10 months' duration. Right labium majus ; both labia and part of clitoris removed by knife. Healed slowly by granulation ; result satisfactory. Left hospital in 64 days after operation.

13. *Venous Hæmatoma of axilla*—Hindu male, æt. 45. Tumour noticed two months ago ; grew very rapidly. Left axilla filled with a large, globular, very tense tumour from which venous blood flowed on puncture. Removed antiseptically. Loop of catgut threads passed round axillary vessels before operation ; deep connections secured with catgut ligature before division. Found to be an immense outgrowth or aneurism of the axillary vein. Wound healed mostly by first intention. Left hospital with sound cicatrix in 38 days.—(Vide *Lancet*, vol. 1 of 1881, page 133.)

14. *Bronchocele*.—Mahomedan male, æt. 29 ; 8 years' duration, about the size of a child's head. Removed antiseptically ; straight incision in middle line of neck ; base of tumour ligatured with catgut in several sections before division. Wound healed mostly by first intention. Lower part suppurated and healed by granulation. Left hospital in 62 days with a linear cicatrix.

In no class of operations is the strict antiseptic system of greater advantage than in the removal of tumours, and several of the cases above detailed illustrate this in a very satisfactory manner, the two last very conspicuously.

V. 1. *Lateral lithotomy*.—(a.) Mahomedan, æt. 36 ; stricture and perinæal fistula. Stricture dated by Holt's instrument ; fistula included in incision for removal of stone. Discharged cured in 42 days. Phosphatic stone weighed 210 grains.

(b.) Hindu, æt. 40. Stone crushed in first instance, but a large and very hard nucleus remaining which escaped the grasp of the lithotrite, and the bladder being full of debris he was cut, the nucleus removed and bladder washed out. Discharged well in 38 days. Phosphatic and uric stone, weighed 420 grains exclusive of debris.

(c.) Hindu, æt. 8. Operation was followed by pelvic cellulitis. Discharged well in 38 days. Oxalate of lime stone weighed 60 grains.

(d.) Male, æt. 40. Two stones removed ; no bleeding of consequence either primary or secondary. Died 18 days after operation of catarrhal dysentery and bronchopneumonia ; wound had contracted and was healing. Weighed 133 grains, composed of oxalate of lime.

(e.) Hindu, æt. 6. Recovered in 27 days. Uric calculus ; weighed 63 grains.

(f.) Hindu, æt. 55. Lithotritry tried in first instance. Stone encysted ; edge of cyst ran into grasp of lithotrite ; bladder torn in withdrawal. Lateral operation performed. Peritonitis set in on second day. Died 3 days after operation ; stone phosphatic and uric, size of a hen's egg.

(g.) Hindu, æt. 35. Recovered without a bad symptom in 22 days. Oxalate of lime, weighed 220 grains.

(h.) Hindu, æt. 43. Made water on 6th day ; wound closed on 11th. Discharged in 20 days. Uric calculus, weighed 18 grains.

In all these cases the operation was performed by lateral incision on left side. The primary incision reached the staff, and the second opened the bladder. In

no case was the rectum injured. A tube was not used in any instance, though in (*f.*) it might have been inserted with advantage.

The bladder was invariably washed with Carbolic lotion (1 in 40) after operation.

VI. 1. Tracheotomy.—(*a.*) Hindu male, æt. 45. Laryngitis of $3\frac{1}{2}$ months' duration; history of syphilis. Admitted with great dyspnœa, relieved by aconite, blisters, &c. Imminent suffocation 21 days after admission necessitated laryngo-tracheotomy. He survived the operation 29 days, and died of septicæmia and pneumonia. The thyroid cartilage underwent necrosis and lay in a gangrenous cavity.

(*b.*) Mahomedan male, æt. 35. Symptoms of dyspnœa of 10 days' duration very urgent on admission; history of syphilis. Tracheotomy performed at once below the isthmus. Died of dyspnœa 4 days after operation. An aneurism of the arch of the aorta was found after death.

2. Herniotomy.—(*a.*) Native Christian, æt. 27. Painful swelling of right inguinal region with obstructed bowels for four days before admission. Right testicle in inguinal canal. Continued to suffer from pain and obstruction, and symptoms of strangulation supervened; the sac was opened. It was found to be a congenital omental hernia, the obstruction being caused by doubling of the bowel and the omentum, which was almost gangrenous, was adherent to the fundus of sac. The omentum was tied at the neck of the sac with catgut and removed; the gut being liberated and reduced. The edges of the sac and wound were carefully stitched with catgut. The wound suppurated, gaped and healed by granulation. An abscess of the abdominal wall afterwards formed which was treated antiseptically with success. The operation proved a radical cure of the hernia. Patient has been repeatedly seen, and there has been

no return of the disease. Discharged 62 days after operation.

(b) Mahomedan male, æt. 35. Left oblique inguinal hernia; 30 years' duration. Irreducible for 48 hours. Some symptoms of strangulation. Ice and taxis under chloroform having failed, herniotomy was performed, followed by Wood's operation, under antiseptic precautions; pillars were brought together with double catgut thread in addition to wire. Latter removed on 11th day; wound putrefied, suppurated and healed by granulation; no descent of hernia during the 40 days he remained in hospital after operation.

(c). Hindu male, æt. 36; Oblique inguinal hernia of left side; of 3 months' duration, three days down; symptoms of strangulation almost amounting to prostration; sac laid open; intestine adherent to sac; sloughy opening at one part. Dressed for artificial anus. Died next day with symptoms of peritonitis.

3. *Wood's operation for the radical cure of hernia.*—
(a.) Mahomedan male, æt. 35. Right oblique inguinal, of five years' duration; incarcerated for 15 days before operation, reduced by pressure of elastic bandage after purgatives, ice and taxis under chloroform had failed. Wood's operation performed under antiseptic precautions; wire removed on 10th day; wound suppurated. Considerable contraction of ring occurred, but the rupture came down after the wound had healed. Discharged with a truss in 48 days.

(b.) Mahomedan male, æt. 50. Right oblique inguinal hernia, of 6 months' duration. Wood's operation performed antiseptically; wire removed on 12th day, wound healed in a fortnight. Canal much contracted. Discharged with a truss in 26 days.

(c.) Mahomedan male, æt. 50. Oblique inguinal hernia, of one year's duration. Wood's operation performed antiseptically; wire removed on 9th day; wound suppurat-

ed. No descent of hernia while in hospital. Provided with a truss. Discharged in 32 days.

(d.) East Indian male, æt. 37. Right oblique inguinal hernia of one year's duration. Wood's operation performed antiseptically; wire removed on 11th day; wound healed in 16 days. No descent of hernia took place. Discharged with a truss in 34 days.

(e.) Re-admitted next day after discharge. Hernial protrusion took place after he began to walk about. Operation repeated antiseptically 6 days after admission; wire removed in 11 days; wound healed in three weeks. Discharged in 30 days apparently cured.

[This man has recently (2nd March) been admitted a third time with slight hernial protrusion, and subjected to a third operation. The result will appear among the operations of 1881.]

(f.) Mahomedan male, æt. 40. Oblique inguinal hernia of right side, of one year's duration. Had also a hernia on left side. Latter operated on on 7th July; wire removed on 17th (10 days); healed in three weeks. Right side operated on on 20th July; wire removed on 4th August (15 days); operation repeated on left side 25th August, on account of descent of hernia; wire removed on 7th September (12 days). A double catgut ligature was placed on the pillars in addition to the wires. Healed on 25th September. Wound remained aseptic in all three operations; suppurated on last occasion. Hernia descended on both sides, although canals and rings underwent contraction. Provided with a truss. Left hospital 84 days after first operation.

(i.) Native Christian, æt. 30. Left oblique inguinal hernia, 1½ year's duration. Patient suffering from bronchitis and heart disease; hernia constantly coming down. Operation performed antiseptically. Catgut ligature passed through pillars in addition to wire; coughed much during operation. Symptoms of strangula-

tion and peritonitis observed next day. These increasing, the wound was re-opened on third day. During operation and while slightly under chloroform patient vomited and died suddenly on the table of asphyxia. A portion of the sac had remained in the scrotum and a loop of intestine had been forced into it by the constant coughing which had become strangulated.

(j.) Mahomedan male, æt. 70. Left oblique inguinal hernia, of 3 years' duration ; ring very large ; constant descents ; operation performed antiseptically ; wire removed in 21 days. Left hospital in 44 days. No descent of hernia.

(k.) American male, æt. 40. Left oblique inguinal hernia ; 7 years' duration ; ring admitted two fingers. Operation performed antiseptically ; wound suppurated ; wire removed after 11 days. Wound healed in 37 days. Hernia descended two days after. Discharged in 57 days wearing a truss.

13 operations for the radical cure of hernia, according to Professor Wood's plan, were performed in 1880. The result was on the whole disappointing. In only one case did putrefaction occur, and in none except the fatal case (i,) in which the circumstances were very unfavourable, did any constitutional or local disturbance of consequence arise. Only 3 of the thirteen operations succeeded in preventing subsequent descent of the hernia. The ring was contracted in all the cases, and considerable effusion took place, but in the majority, on absorption of this effusion, the hernia descended. The truss was more effective in preventing descent in these cases than it had been. In one case the operation was repeated without avail. In another case with double hernia two operations were performed on one side and one on the other : they all failed. In the majority the wires were removed in from 9 to 12 days. In one case they were retained for 15 days without effect, in another successful case for 21 days.

The occurrence of inflammation as indicated by the formation of pus appeared to make no difference in the result. In two cases the pillars were brought together by a double catgut thread in addition to the wires: one of these succeeded. The operation was performed exactly according to Professor Wood's instructions, special care being taken to include the conjoined tendon in the inner wire and drag it outwards into contact with the outer pillar. The impression left on my mind by the experience of the year is, that the operation performed under antiseptic precautions, while very safe, is not effective, and I have since the close of the year resolved to try another method of closing the canal and rings.

4. *Operation for Atresia Oris.*—(a) Native Christian female, æt. 19. Mouth closed by tight cicatricial band consequent on ulceration of the cheek and gum, caused by irruption of wisdom tooth. Band divided freely; the tooth, which was growing into the cheek, extracted; mouth kept open by occasional use of Smith's gag. Left hospital 21 days after operation.

(b.) Hindu male, æt. 20. History of chancre and ptyalism; ulceration of cheek and gums, and cicatricial contraction; could not separate teeth. Cicatricial bands divided. Mouth kept open by occasional use of gag. Left hospital in 34 days with the wound healed and able to open his mouth fully.

5. *Fistula in ano.*—The fistula was laid open in the usual way in both cases—with good result.

6. *Anal fissure.*—Divided with underlying sphincter: complete recovery in each case.

7. *Perinæal section.*—(a.) Native Christian, æt. 34. Stricture followed by perinæal abscess. Abscess opened and stricture divided by same operation; wound healed up in a fortnight; full-sized bougie passed occasionally. Discharged in 33 days.

(b.) Mahomedan, æt. 30. History of gonorrhœa, stricture and perinæal abscess. No retention, but instrument

could not be passed through stricture. Abscess laid open freely ; instruments entered bladder a few days after. Got urethritis, ophthalmia, and synovitis of both knees ; urethra gradually dilated and full-sized bougie passed occasionally. Left hospital in 43 days with perinæal wound closed and urethra fully dilated.

(c.) Hindu male, æt. 30. History of gonorrhœa and stricture, fistula following abscess existed at mons veneris, through which most of the urine passed. This was consequent on catheterism for retention a month before admission. Perinæal section performed. Urethra fully dilated. Pubic fistula closed, and subsequently perinæal wound. Full-sized bougie passed occasionally. Left hospital in 53 days.

(d.) Hindu male, æt. 32 ; admitted 10th October. History of syphilis, gonorrhœa, stricture, abscess and fistula. Perinæal section performed and fistulæ laid open. Subsequently two sinuses were found leading to a large abscess cavity on each side of the rectum in the ischio-rectal fossæ. Another passed forward to the left towards the pubis. These were freely laid open 35 days after the first operation. The sphincter was divided on each side. He is still in hospital (31st March.) The fistulous tracts have all filled up and healed, with the exception of the central one, through which a little urine still escapes during micturition. The urethra admits a No. 12 catheter, and patient's general health has greatly improved.

8. *Large abscesses.*—The following are notes of abscesses which, on account of their situation and depth, required for their treatment bold or difficult incisions or dissections.

(a.) *Iliac abscesses.*—i. Hindu male, æt. 17 ; 3 weeks' duration ; commenced with fever ; situated in right iliac fossa. Opened antiseptically below Poupart's ligament by a vertical incision through skin and fascia lata half

way between anterior superior spinous process of ileum and femoral artery, over the iliacus muscle. The cavity was reached by director, the track being subsequently enlarged and drainage tube inserted. Remained aseptic; healed in 15 days. Left hospital in 44 days.

ii. Hindu male, æt. 18; one month's duration; caused by strain. Left side opened as in Case i.; half a pint of pus removed. Drainage tube removed in 13 days. Left hospital in 52 days; discharge sweet throughout.

iii. Mahomedan male, æt. 35; 15 days' duration; left side; fluctuating swelling in upper part of left thigh also, continuous with the iliac swelling. Opened antiseptically at the same point as in Case i. Tubes inserted upwards and downwards. Drainage tubes withdrawn finally in 29 days. Left hospital in 44 days. Two pints of pus removed. Remained aseptic throughout.

iv. Hindu female, æt. 6; two weeks' duration. History of fall and subsequent fever. Left side. Operation performed as in Case i. Tubes removed in 11 days. Discharged in 14 days.

(b.) *Abscess of abdominal wall.*—i. Hindu male, æt. 3; one month's duration; caused by a fall. Situated close to the navel on its right side below external oblique; opened antiseptically. Drained by caoutchouc tube. Healed up in 12 days.

ii. East Indian male, æt. 3; caused by a fall sustained four days before admission. Situated in right hypochondrium, beneath external oblique; tubes removed on fifth day. Left hospital in 10 days.

iii. Mahomedan male, æt. 24; ten days' duration; consequent on sprain. Situated in left inguinal region—superficial to muscles. Discharged in 18 days.

iv. Mahomedan male, æt. 4; 14 days' duration. Situated in right hypochondrium in substance of transversalis muscle. Opened antiseptically; closed in 10 days. Superficial wound healed a few days afterwards.

v. Native Christian, æt. 27 ; arose during convalescence from operation for strangulated hernia (vide VI. 2 (a),) ; situated in right hypochondrium between peritoneum and muscles. Opened antiseptically by careful dissection. Healed in a fortnight.

(c.) *Gluteal abscesses*.—i. Hebrew male. æt. 3 ; 8 days' duration ; left side. Opened antiseptically above and behind trochanter major. Discharged in 7 days ; abscess quite healed.

ii. Hindu male, æt. 40 ; 20 days' duration ; left side. Very large abscess extending from crest of ileum to below trochanter ; suffered much from fever. Opened antiseptically 2 ; pints of pus evacuated. Remained aseptic ; got an attack of sloughing dysentery, of which he died 7 days after operation.

iii. Hindu male, æt. 50 : 2 months' duration Situation and size similar to last. Opened behind great trochanter ; $2\frac{1}{2}$ pints of matter evacuated ; 4 drainage tubes inserted which were gradually withdrawn, the last 7 days after operation ; got a glandular abscess in neck, which was opened and scraped out. Left hospital in 33 days with a small sinus in neck.

iv. Eurasian female, æt. 20 ; 15 days' duration. History of fever and ague ; a small abscess on right thumb, was opened nine days before admission : left side. Opened antiseptically 2nd November. A small abscess of left forearm had been opened on 29th October. An abscess at upper third of right thigh opened 5th November. Fever continued high ; dysentery appeared on 11th ; bed sore formed ; rigors set in on 11th, frequently repeated. Erythema nodosum observed on 12th. Joints became painful. Abscesses formed in arms and upper part of right thigh ; opened on 13th. Pneumonia detected on 15th. Became delirious ; died on 16th. A case of pyæmia. All the abscesses which were opened remained aseptic.

(d.) *Abscesses of thigh.*—*i.* East Indian male, æt. 32 ; deep-seated abscess of left thigh ; opened antiseptically. Left hospital well in 55 days ; delay caused by re-formation of abscess owing to premature withdrawal of tube.

ii. Hindu male, æt. 26 ; 3 weeks' duration. Continued and severe fever ; very low. Large deep-seated abscesses situated in both thighs. Opened simultaneously under antiseptic precautions. Died in 4 days of prostration.

iii. Portuguese male, æt. 35 ; 1 week's duration. History of injury. Opened antiseptically. Premature removal of tubes caused re-accumulation. Recovered completely in 60 days.

iv. Hindu male, æt. 37 ; 6 weeks' duration. Suffering from diabetes ; very much emaciated. Opening made on inner side of leg and four tubes passed up and down. About 3 pints of pus removed. Discharge continued copious ; tissues of leg and thigh sloughed and patient was removed 31 days after operation in a dying state.

v. Hindu female, æt. 25 ; 15 days' duration ; back of left thigh. Opened and dressed antiseptically ; tubes removed in 14 days. Discharged 21 days after operation.

vi. Eurasian male, æt. $1\frac{1}{2}$; 9 days' duration ; situated between adductor magnus and hamstrings of right side. Opened and dressed antiseptically. Drainage tube removed in 6 days. Left hospital quite recovered in 10 days.

(e) *Abscesses of leg.*—*i.* Eurasian seaman, æt. 48 ; 23 days' duration ; admitted 27th July. Situated beneath deep fascia of left side. Discharged well.

ii. Re-admitted 8th November, 49 days after discharge, with a large abscess of same leg, of 8 days' duration ; opened antiseptically and closed in 50 days. Knee-joint swelled and abscess pointed in popliteal space ; this was opened on 1st December after the former, and closed in 60 days. The knee-joint gradually subsid-

ed. It remained weak, and some lateral motion was elicited by manipulation. A starch bandage was put on. He is still (1st April) in hospital. He is able to use the leg without pain or discomfort. There has been no re-appearance of abscess.

iii. Eurasian male, æt. 36 ; eight days' duration. Situated beneath deep fascia. Discharged on 1st September, well in 24 days.

9. *Incisions for hydrocele.*—(a.) Mahomedan, æt. 45 ; 16 years' duration ; inflamed for 4 days. Laid open by free incision ; turbid serum escaped ; dressed with boracic gauze ; healed by granulation. Discharged in 69 days.

(b.) Hindu, æt. 65 ; one year's duration ; inflamed. Laid open freely ; lymphic fluid evacuated ; granulated. Discharged in 29 days with linear cicatrix.

(c.) Hindu, æt. 45 ; 25 years' duration. Injured a month before admission, causing sloughing of scrotum. Cavity of tunica laid open, clear fluid discharged ; healed by granulation ; discharged in 45 days with wound fully cicatrized.

(d.) Hindu, æt. 30 ; inflamed ; scrotum œdematous, laid open freely ; opaque serous fluid evacuated ; healed in 43 days.

In all these cases inflammation of the sac existed, causing pain, fever, tension, œdema of scrotum and sloughing in one instance. The cavity of the tunica was obliterated in each case and a radical cure obtained—the constitutional distress being at once relieved.

10. *Incisions for hæmatocele.*—(a.) Hindu, æt. 45. Double hæmatocele ; of 4 years' duration, inflamed for 5 days ; general health low. Both laid open simultaneously ; grumous fluid and decolorized clot evacuated ; healed by granulation in 72 days. General health restored.

(b.) Native of Goa, æt. 28 ; 2 years' duration ; left

side. Laid open freely, contained sanguineous serum and coagulated blood. Discharged well in 77 days.

(c). Hindu, æt. 34 ; 9 years' duration ; right side ; hydrocele of left. Hæmatocele laid open by free incision ; contained blood ; hydrocele tapped. Recovered in 67 days.

VII. 1. *Operations for adherent penis after removal of scrotal tumour.*—(a.) East Indian, æt. 30. Scrotal tumour removed by operation on 10th September 1879 ; recovered in 3 months. Penis became gradually retracted and pulled down. Cicatricial band attaching the organ to the scrotum divided transversely and incision stitched vertically. Operation performed antiseptically. Wound remained sweet, and healed partly by granulation and partly by first intention. Discharged in 29 days. Penis quite free.

(b.) Eurasian, æt. 43. Tumour removed in December 1879. Retraction of penis took place during healing. Organ free to the extent of $\frac{3}{4}$ inch. Operation as in last case ; result satisfactory ; left hospital in 50 days.

2. *For Urinary fistula.*—East Indian, æt. 34. Fistula consequent on stricture. Two plastic operations had been previously performed ; fistula cauterized on two occasions. Bladder very irritable. Edges pared, small lateral flaps cut and stitched together with catgut. Winged catheter inserted. Patient withdrew catheter ; urine escaped through wound ; primary union thus prevented ; healed by granulation, and contracted slightly. About $\frac{1}{4}$ th of the urine passed through the fistula. Left hospital 57 days after operation.

3. *For Epispadias.*—Hindu, æt. 15 ; congenital. Roof of urethra wanting to root of penis ; mucous membrane dissected from sides of fissure and stitched on an India rubber tube ; skin freed on each side and brought to meet in middle line ; lateral incisions made to relieve tension. Operation failed ; stitches gave way and wound gaped.

Sides healed by granulation, leaving the chasm a little smaller than it was originally. Discharged in 27 days.

4. *For Talipes varus.*—(a.) French female child, aged 2 years; both feet affected. Tendo Achillis and both tibiales divided subcutaneously. Deformity entirely corrected by the use of light block tin shoes.

(b.) Hindu male child, æt. 2 years, 4 months; congenital; both feet affected. Tendo Achillis and both tibiales divided; bandaged to a straight splint on outside of foot. Deformity corrected.

(c.) Twin brother of last case; both feet similarly operated on. False aneurism formed behind inner malleolus of right foot, laid open and artery (malleolar branch of posterior tibial) tied above and below. Wound healed up kindly.

(d.) Hindu male child, one year old; talipes varus of both feet, operated on as in previous cases. Deformity corrected to a great extent. Special boots recommended.

Circumcision.—(a.) East Indian, æt. 13; congenital. Prepuce removed and adhesions to glans broken down. Result good.

(b.) Hindu, æt. 24. Contracted chancre 4 months ago; sores still on preputial meatus. Prepuce removed by slanting incision. Result good.

(c.) Hindu, æt. 18; congenital; retention 10 days before admission; prepuce contracted and adherent, removed obliquely; thick fibrinous membrane found between inside of prepuce and glans; mucous membrane slit on each side. Result satisfactory.

(d.) Hindu, æt. 16. Sore on penis; paraphimosis, of 6 days' standing; reduced; circumcision performed three days afterwards; thickened prepuce removed. Result good.

(e.) Hindu, æt. 30. History of gonorrhœa and chancre, purulent discharge existing, and sinus in right groin. Prepuce removed by circumcision, sinus slit. Discharged cured of both ailments in 30 days.

The oblique removal of the prepuce and bilateral division of the remains of its mucous membrane gave excellent results in these cases.

VIII. 1. *Hydrocele tapped and injected*.—3ij of tinct. Iodi., diluted with an equal quantity of water, injected. Discharged in 13 days ; result satisfactory.

2. *Nerve-splitting*.—(a.) East Indian male, æt. 17. Painful thickening of left ulnar nerve and tuberculated patch of anæsthetic skin on dorsum of wrist and lower part of forearm ; commenced with itching of skin 5 years ago ; fingers not affected. Similar patch over right tendo Achillis. General health good. Thickened nerve exposed above inner condyle split to extent of 4 inches and pulled. Sheath found much thickened. Wound of nerve gaped. Operation performed antiseptically on 18th April ; healed on 25th Nov. No benefit. Musculo-spiral exposed above outer condyle and stretched on 28th ; wound healed by first intention. Operation followed by wrist drop, which gradually disappeared. No improvement as regards anæsthetic patch ; would not have internal cutaneous stretched.

(b.) Mahomedan, æt. 52. Two painful patches of thickened skin on wrist and ulnar side of left forearm. Disease of two months' duration. Ulnar nerve split for 4 inches above condyle and pulled. Sheath pearly in colour and thickened. Hyperæsthesia relieved ; thickening of skin reduced somewhat. Wound healed in 11 days ; performed antiseptically. Catgut drain used.

(c.) Hindu, æt. 29. Ulnar side of left forearm and little finger anæsthetic ; skin thickened. Similar patch on left leg above outer malleolus. History of secondary syphilis 6 years ago. Disease of 5 months' duration ; became glazed, red and discoloured one month ago. Ulnar nerve above elbow much thickened. Nerve split and stretched for about 5 inches ; sheath thick and pearly. Operation performed antiseptically ; catgut drain used.

Wound healed in 12 days. Thickening of skin gradually disappeared ; sensation restored to a slight extent.

3. *Nerve-stretching*.—Hindu female, æt. 40. Anæsthetic leprosy of 6 or 7 years' duration ; right leg and foot affected ; gangrenous ulcers on toes. Sciatic nerve stretched. Wound healed in a week. Ulcers healed and sensation restored to a slight extent.

In two of the cases where splitting of the thickened nerve was the main feature of the operation, decided relief was obtained. In the case of nerve-stretching the disease had advanced too far to leave ground for much hope.

GENERAL REMARKS.

1. *Mortality*.—The death-rate in 1880 amounted to 10·7 per cent. against 18·5 in 1879. On comparing the tables from which these rates are deduced, it will be found that the operations of 1880 were by no means lighter in character than those of 1879. Indeed the numbers of the more important and serious cases are wonderfully alike. Whether the improved death-rate is a mere variation—a result of what may be briefly and expressively called luck,—or depends on an improvement in the management of cases, future returns will show. I am inclined provisionally, and subject to correction by wider experience, to believe that the more assiduous and scrupulous use of antiseptics has contributed materially to the result.

2. *Antiseptics*.—These have been more largely and carefully employed—used more strictly in cases to which they are easily applicable, and extended to others where success is not so easily attained. Rigid Listerism has been adopted whenever possible ; and in cases such as operations about the mouth or anus, where putrefaction could not be excluded, agents such as chloride of zinc, iodine, permanganate of potash and boracic acid, have been freely used with a view to

minimise putridity and remove the irritation and risk of constitutional disturbance liable to follow septic changes occurring on a wounded surface. The benefit to the hospital atmosphere has been undoubted, and I am able to state confidently that the more completely I have succeeded in preventing putrescence in a wound, the less suffering has the patient had to endure, and the more speedy his recovery.

3. *Hospitalism*.—The diseases signified by this term have been much less frequent in 1880 than in 1879. Under the orders of the Surgeon-General for Bengal a record was kept during the year of all cases of this kind, whether following upon operations or not. The total number of these cases which occurred in the First Surgeon's wards during the year was 15, namely 3 cases of pyæmia, 3 of septicæmia, 7 of erysipelas and 2 of sloughing or gangrenous cellulitis.

No case in which strict Listerism was established and maintained, suffered from any form of septic infection.

Of the 15, 6 were admitted with the disease already established, 2 developed it in hospital, and in 7 it occurred after operation; 4 of these were operations for scrotal tumour, 1 amputation of the left half of the lower jaw and submaxillary gland in an old man, and 1 removal of necrosed jaw and plastic operation on cheek in an unhealthy youth. All the cases of pyæmia and septicæmia proved fatal; one case of sloughing cellulitis died, and the other recovered, and two of the 7 cases of erysipelas proved fatal.

4. *Catgut*.—This material has been used for a variety of important purposes. For the deligation of divided vessels no other ligature has been employed, and in no single case has failure resulted or irritation been caused by cutting the ligature short and leaving it in the wound. In a few scrotal tumour operations

secondary hæmorrhage occurred, but this was caused by vessels which escaped notice during the operation subsequently bleeding when reaction occurred. In two cases the femoral artery was tied in its continuity with catgut with the effect of permanently occluding it. In several cases the deep connections of tumours were ligatured before division and bleeding prevented at the time of operation and subsequently. The sewing of the testes together and their fixation by means of catgut to the surface of the perinæal wound has been an unqualified success. These organs are embedded in granulation material effused from their own raw surface and that of the wound, and nothing is seen of the catgut afterwards.

Catgut has also been used for purposes of drainage with unfailing success. It is better than caoutchouc tubes, because there is no risk of entrance of putrid air and no need of withdrawal, the material melting away or becoming organized after it has fulfilled its function. The stitching together with catgut of the edges of the divided mucous membrane in excisions of the lower jaw is also a decided advantage, as tending to prevent entry of putrid or putrescent material into the wound cavity. Of the employment of catgut in the radical cure of hernia I hope to write fully with extended experience in next year's precis.



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PRECIS OF OPERATIONS PERFORMED IN THE WARDS OF THE FIRST SURGEON, MEDICAL COLLEGE HOSPITAL, DURING THE YEAR 1881.

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The following table and notes of cases are in series with those published for the years 1879 and 1880 (Vide *Indian Medical Gazette*, Vol. XV., pp. 92, 123, and Vol. XVI., pp. 123, 154). The abstracts have been prepared from detailed histories drawn up by Assistant-Surgeon DEVENDRA NATH DEY, M. B., to whom I am deeply indebted for the able and intelligent aid he has rendered me in the performance of operations, the management of cases and the maintenance of records.

DESCRIPTION OF OPERATIONS.		Number of operations.	Died.
<i>I.—Operations on Arteries.</i>			
1. Ligature of radial for traumatic aneurism,	...	1	0
<i>II.—Operations on joints.</i>			
1. Extension of stiff joints,	{ a. elbow,...	1	0
	{ b. knee,...	2	0
2. Excision of joints,	{ a. elbow,...	2	0
	{ b. knee,...	2	0
Total,	...	7	0

DESCRIPTION OF OPERATIONS.		Number of operations	Died.
<i>III.—Operations on bones.</i>			
1.	Partial excision for necrosis,	...	2 0
2.	—————, ————— caries,	...	2 0
Total,		...	4 0
<i>IV.—Amputations.</i>			
<i>A.—For injury.</i>			
1.	Primary of 4th and 5th metacarpal bones,...	...	1 0
2.	Primary above ankle (Syme's),	...	1 1 ¹
3.	Secondary—of forearm,	...	1 1 ²
4.	———, ——— of thigh,	...	1 1 ³
5.	———, ——— of great toe,	...	1 0
<i>B.—For disease.</i>			
6.	For osteo-sarcoma of leg—of thigh,...	...	1 0
7.	For disease of knee-joint—of thigh,...	...	1 1 ⁴
8.	For mycetoma of foot—of leg,	...	1 0
Total,		...	8 4
<i>V.—Removal of tumours.</i>			
<i>A.—Malignant.</i>			
1.	Scirrhus of Mamma,	...	3 2 ⁵
2.	Epithelioma, (a.) of lip,	...	1 0
	(b.) of tongue,	...	1 0
	(c.) of shoulder,	...	1 0
	(d.) of thigh,	...	1 0
	(e.) of leg,	...	1 0
	(f.) of penis,	...	2 0
3.	Sarcoma, (a.) of pharynx,	...	2 0
	(b.) of neck,	...	2 2 ⁶
	(c.) of back,	...	1 1 ⁷

DESCRIPTION OF OPERATIONS.			Number of operations.	Died.
<i>B.—Non-Malignant.</i>				
4.	Fibroma, (a.) of lower jaw, ...	...	1	0
	(b.) of male mammilla, ...	...	1	0
5.	Fibro-cystoma of axilla,	...	1	1 ^s
6.	Glandular tumour, (a.) of male mammilla	...	1	0
	(b.) of axilla, ...	...	1	0
7.	Angioma of external ear, (ligatured),	...	1	0
8.	Mucous polypus of mouth,	...	1	0
9.	Cystic tumour, (a.) of forehead,	...	1	0
	(b.) of back, ...	...	1	0
	(c.) of foot, ...	...	1	0
10.	Elephantiasis, (a.) of scrotum,	...	23	4 ^o
	(b.) of labium, ...	...	1	0
11.	Inflammatory tumour of mamma,	...	1	1 ¹⁰
12.	External and internal piles,	...	4	1 ¹¹
Total,			54	12
<i>VI.—Removal of Calculi.</i>				
1.	Vesical, by lithotomy, ...	...	3	0
2.	—, — lithotripsy, ...	...	3	0
			6	0
<i>VII.—Incisions.</i>				
1.	Tracheotomy, ...	...	5	0
2.	For strangulated hernia,	...		
	(a.) with opening sac, ...	...	2	2 ¹²
	(b.) without opening sac, ...	...	1	0
3.	For radical cure of hernia,	...		
	(a.) Wood's operation, ...	...	2	0
	(b.) antiseptic operations with	...	8	1 ¹³
	catgut, ...	...	
4.	For fistula in ano, ...	...	4	0
5.	Perinæal section, ...	...	8	1 ¹⁴
6.	For hydrocele, ...	...	3	0
7.	For hæmatocele, ...	...	2	0
8.	For large abscesses, ..	...	38	5 ¹⁵
			73	9

DESCRIPTION OF OPERATIONS.		Number of operations.	Died.
<i>VIII.—Reparative operations.</i>			
1.	For cicatrix after burn, ...	1	1 ¹⁶
2.	For cleft palate, ...	1	0
3.	For hare-lip, ...	2	0
4.	For tongue tie, ...	1	0
5.	For phimosis—circumcision, ...	5	0
		10	1
<i>IX.—Operations not classed.</i>			
1.	Hydrocele tapped and injected, ...	7	0
2.	Nerve-stretching, ...	1	0
		8	0
Grand total ..		171	26

In preparing the following abstracts of the cases contained in the foregoing return, I have aimed at condensation without sacrifice of the salient points. A few comments are appended to particular cases and groups of cases which appear to merit special notice.

I. 1. Ligature of the right radial artery for traumatic aneurism.—Hindu female æt. 35. Sustained a wound of lower third of right forearm by the spike of a date palm 3 months before admission. Suppuration followed. An abscess was lanced by a native doctor 9 days after injury. Operation followed by profuse arterial bleeding. Wound healed in a month. A pulsating swelling gradu-

Death causes.—1 Tetanus; 2 Secondary hæmorrhago; 3 Traumatic gangreno; 4 Hectic—exhaustion; 5 (a.) Septicæmia, (b.) Thrombosis; 6 (a.) Recurrence, (b.) Shock; 7 Paralysis and exhaustion; 8 Diarrhœa and exhaustion; 9 one septicæmia, three tetanus; 10 Shock; 11 Exhaustion; 12 (a.) Shock, (b.) Peritonitis; 13 Pyæmia; 14 Shock and hæmorrhage; 15 (a.) Asthenia, (b.) Stopticæmia, (c.) Pericarditis, (d.) Dysentery, (e.) Diarrhœa; 16 Shock.

ally getting larger succeeded. Radial artery ligatured with catgut on proximal and distal aspect of sac, which was laid open and emptied; wound drained by catgut threads and stitched with horsehair under strict antiseptic precautions; wound remained aseptic and healed in 10 days.

II. 1. a. Extension of stiff elbow-joint.—Mahomedan male æt. 40. Joint stiffened at a right angle, the result of rheumatic arthritis; forcible extension under chloroform followed by passive motion. Movements restored almost to normal limits: 19 days in hospital.

b. Extension of stiff knee-joint. (a).—Hindu male æt. 26. Joint fixed at angle of 160° ; 6 months' duration, followed by strumous inflammation. Forcible extension under chloroform followed by gradual straightening by means of MacIntyre's splint. Remained in hospital 52 days, and left with a straight leg but somewhat stiff joint. Could walk firmly with the aid of a stick.

(b).—Hindu male æt. 26. Knee bent at an angle of 125° ; inflammation of leg and abscess and sinus in popliteal space. Commenced about a year before admission. Forcible extension under chloroform and gradual straightening with MacIntyre's splint. Deep ulcer formed above patella from pressure of bandage. Remained in hospital 204 days, and left with a straight leg: joint somewhat tender. Required the use of crutches.

2. a. Excision of elbow joint. (a).—Hindu female æt. 40. Suppuration of left elbow joint, which was distended with pus and grated on movement. Arm and forearm extremely oedematous. Resection performed antiseptically and subperiosteally by single longitudinal incision. Cartilages found eroded and partly exfoliated: ends of bones sawn off. Wound remained sweet; no constitutional disorder. Passive motion commenced on 20th day. Remained in hospital 98 days; left with a sound and freely moveable false elbow joint.

(b).—Hindoo male æt. 8. Was inoculated four years ago. This led to necrosis of several bones—right tibia and fibula, left fibula and left humerus. Elbow joint of left side stiff from thickening of lower end of humerus. Resection performed by straight posterior incision. Sequestrum, consisting of 2 inches of lower end of shaft, removed and ends of bones sawn off. Passive motion commenced on 9th day. Abscess formed after wound in cavity had healed, necessitating incision and giving rise to much effusion. Remained in hospital 170 days after operation, and left with a stiff joint in semi-flexed position.

2. b. (a). *Excision of the knee-joint for ankylosis.*—Hindu male æt. 42. Arthritis of left knee 4 years ago; history of subsequent suppuration treated by incision; knee firmly fixed at a right angle; head of tibia dislocated outwards. Recent abscess of popliteal space opened, and leaving a sinus; leg wasted. Resected antiseptically by semilunar incision below patella, which was removed. Ends of bones forcibly separated; $\frac{1}{2}$ an inch sawn off tibia, and about 2 inches off femur. Tendons of semiten-dinos and biceps divided subcutaneously; ends of bones drilled and united by twisted wires. Catgut drain brought out at each angle of wound. Pursued an aseptic course. No suppuration or constitutional disturbance; wound healed by first intention. Drain melted away and ends removed in 8 days; wires removed after 69 days. Left hospital in 150 days with a firm straight limb about 3 inches shorter than the other, and able to walk with a high-heeled and soled shoe. [This case pursued a typical aseptic course. The union of the ends of the bones by wire undoubtedly accelerated recovery.]

(b).—*Resection of knee joint for disorganization.*—Hindu male æt. 30. Disease of joint of 9 years' standing; much worse within last year; swollen, tender; bent at an angle of 145° ; movements limited; some lateral

motion ; some crackling ; starting at night. Health bad, anæmic ; gums spongy ; leg much wasted but not œdematous ; resected about a month after admission after other treatment failed ; semilunar incision below level of patella which was left ; about $\frac{1}{2}$ an inch cut off ends of bones ; joint quite disorganised ; bones infiltrated and soft ; catgut drains inserted ; operation done antiseptically. Considerable local and constitutional disturbance ensued. Cellulitis extended up the femur and resulted in abscess which required free opening ; other abscesses formed communicating with wound cavity. Wound healed imperfectly and a low form of inflammation with profuse suppuration resulting in multiple sinuses, continued ; symptoms of hectic with great emaciation and exhaustion supervened, and it was considered advisable to amputate the limb—71 days after the resection. See below.

[It would probably have been better had amputation been performed in this case in the first instance.]

III. 1. Sequestrotomy. a.—Hindu male æt. 8 (see II. 2. *a (b)*). Necrosis of shaft of right tibia and fibula and left fibula following small-pox consequent on inoculation 4 years ago. Sequestra removed, cavities scraped out and purified with chloride of zinc (40 grs. to 1 oz.); wounds dressed antiseptically ; wounds remained aseptic and healed rapidly by granulation.

b. Hindu male æt. 18. Upper two-thirds of epiphysis of right humerus necrosed ; consequent on an abscess which occurred a year ago. Four sinuses led to dead bone. They were laid open, the cloaca enlarged and sequestrum (5 inches long) removed ; wound purified as in last case and dressed antiseptically. Is still in hospital (3 months after operation), cavity almost filled up. Two sinuses remained whose mouths contracted. These were again laid open and the wound treated for granulation. Arm much shorter than the

opposite; bone firm; shoulder joint somewhat stiff. Discharges light and serous; health greatly improved.

2. *Excision of caries. a.*—Hindu male æt. 25 Caries of os calcis of 4 months' duration. History of abscess followed by sinuses which were found to lead to a carious cavity. Sinuses connected by incision; carious bone thoroughly removed by gouge, chisel and hammer and osteotrite; sinuses scraped and cavity dressed antiseptically with boracic gauze. Remained aseptic. Sinuses had to be enlarged on two subsequent occasions for the extraction of fragments of bone. The cavity finally healed up soundly after 170 days' residence in hospital.

b. East Indian æt. 18. Caries of os calcis and cuboid of 6 months' standing. Three sinuses on the outer border of foot leading down to carious bone; cavity exposed by free incision and carious material thoroughly extirpated, sinuses scraped out, wound washed with chloride of zinc (40 grs. to 3i) and dressed antiseptically. Cavity filled up with granulation material and wound healed without further operation. Left hospital with a sound, useful though somewhat deformed foot in 111 days.

AMPUTATIONS.

IV. A. 1. *Primary amputation of 4th and 5 metacarpal bones.*—Hindu male æt. 32. Compound comminuted fracture with great laceration of soft parts; occurred 2½ hours before admission. Ring and little fingers removed with metacarpal bones, which were divided ½ an inch from proximal end eatgut drains and horse-hair stitches. Flaps sloughed, but on separation wound granulated kindly and healed in two months.

2. *Primary amputation above the ankle joint (Syme's).*—Mahomedan male æt. 12. Right foot crushed 4 hours before admission; bones broken and dislocated, and soft parts stripped and lacerated. Lacerated wound of scalp over occipital bone. Flap obtained from heel and inner side of foot. Bones divided above malleoli; performed

under strict antiseptic precautions. There was considerable reaction and temperature continued high (100 to 102°), wound remained aseptic, and no local inflammation or suppuration arose. Symptoms of tetanus appeared 7 days after operation, the disease assumed a very acute type and proved fatal in 24 hours.

3. *Secondary amputation of the forearm for gangrene.*—Hindu male æt 30. Left forearm crushed in a sugar mill 11 days before admission. Both bones broken; tissues on anterior aspect of forearm gangrenous. Temp. 103°, pulse feeble; patient restless and delirious. Gangrenous tissues removed at line of demarcation with scissors. Oval flap cut from sound tissues on dorsum; bones divided 2 inches below elbow; vessels secured with cat-gut. Tissues in a state of inflammatory infiltration; great tendency to oozing which was checked by cat-gut ligatures. Wound washed with chloride of zinc (40 gr. to 3i.) and dressed antiseptically. Secondary hæmorrhage occurred on two occasions in consequence of patient's restlessness. He became low and sank 15 hours after the operation.

4. *Secondary amputation of thigh for compound fracture and hæmorrhage from eroded popliteal artery.*—Hindu male æt. 43, admitted 29th November with compound comminuted fracture of left femur above the condyles; wound was in course of repair when, on 31st December, free arterial hæmorrhage occurred. This was controlled by graduated compress, but was repeated on three subsequent occasions, greatly reducing patient's strength. It became evident that the blood proceeded from the main artery, and amputation was resorted to as the only means of saving life; the bleeding point being very deep and the prospect of gangrene certain if the main artery of the limb were ligated. The amputation was performed by Carden's method bloodlessly and antiseptically. The stump became gangrenous

within 24 hours ; the gangrene spread rapidly and death ensued on the 2nd day after the operation. The popliteal artery was found to have been eroded by a sharp edge of the broken bone.

5. *Secondary amputation of the great toe.*—Hindu male æt. 30. Sustained a severe lacerated wound of the sole of left foot by the fall of an iron bar on it 6 months before admission. Great toe pulled down and fixed at right angles to sole of foot by cicatricial contraction. It was removed at the metatarso-phalangeal joint. The wound healed by granulation in 89 days. Patient left hospital with a useful foot.

6. *Amputation of thigh for osteo-sarcoma of leg.*—Hindu male æt. 18. Tumour of 9 months' duration followed upon an injury ; fungated 10 days before admission ; implicated the whole of the leg, which measured 21 inches in circumference. Skin tense, hot, glazed and tender ; foot oedematous ; inguinal glands enlarged ; patient weak and anæmic. Amputation by Carden's method performed bloodlessly and antiseptically. Catgut drain inserted in front and behind end of bone and brought out at the angles. Wound remained aseptic and healed by first intention. There was no inflammation, suppuration, nor constitutional disturbance. Wire stitches removed in 10 days and horse hair in 18. The wound healed in 11 days, except at the corners where the drains emerged : these dropped off. Patient remained 62 days in hospital until the stump was sufficiently callous to bear the weight of the body on an artificial limb. The tumour was found on examination to be an osteo-sarcoma originating in the head of the tibia.

7. *Amputation of the thigh for disorganized knee joint, &c.*—This patient had undergone resection of the knee joint (see II. 2. b. (b.) above). Amputation was resorted to for the purpose of removing the morbid tissues

which were in a state of suppurative inflammation and so minimising the profuse discharge which was giving rise to a rapidly exhausting hectic. The anterior flap of the resection wound was retained as the anterior flap of the amputation; the patella removed, the posterior flap cut by oblique incision through the popliteal space and the femur divided above the condyles. The cavity of the resection wound was thus taken away. An abscess cavity running up the thigh, into which a counter-opening had been made below the trochanter remained. The man was in a state of miserable debility, but bore the operation well. Very little blood was lost. He seemed at first to rally. No attempt at repair took place; discharge continued profuse; wasting and exhaustion progressive, and he died 8 days after operation. The wound did not undergo putrefaction after either operation, and the suppurative melting away of the tissues seemed to be the result of sheer constitutional asthenia.

8. *Amputation of the leg for mycetoma of foot.*—Hindu male æt. 34. Sustained an injury of the sole of left foot about a year before admission. A month after a few pimples appeared near the wound which suppurated and burst; successive crops of fresh pimples appeared, the foot and ankle meantime growing bulky. On admission foot, ankle and lower third of leg found brawny and covered with button-like tubercles through which a probe entered and passed deeply into the member. No bare bone could be felt. White granular material like hilsa row could be spooned out of the sinuses. Amputation of leg at junction of middle and lower third performed bloodlessly and antiseptically by long anterior and short posterior flaps. Catgut drain used: wound remained aseptic and healed by first intention. Drain fell off on 7th day; wire sutures removed on 5th and horse hair on 11th day. Wound soundly healed in 15 days. Left hospital

54 days after operation. Able to walk comfortably on an artificial bottle leg.

[Nos. 6 and 8 in this list present typical illustrations of the advantage of the antiseptic method in amputation. The use of catgut drains was found to be attended with the best results in both cases. In Nos. 3, 4 and 7 amputation was resorted to under desperate circumstances in the hope of saving life which was fast ebbing under the circumstances detailed. The fatal result in No. 2, though occurring under strict and successful antiseptic management, was in no way due to it. The tetanus which proved so rapidly fatal, was probably due as much to shock as to the irritation arising from the local injury. The two remaining cases were trivial.]

V. 1.—*Scirrhus of Mamma. a.*—Hindu female æt. 45 ; right breast; 11 months' duration. Skin sparingly involved, tumour moveable over pectoral muscle ; hard cord running towards right axilla, glands of which were involved. General health poor. Had borne no children. Gland removed antiseptically ; oval piece of skin covering gland taken away ; axillary glands dissected out. Lower flap sloughed and suppurative cellulitis of chest wall took place, ending in abscess which required opening. Putrefaction was averted throughout by careful use of antiseptics. Constitutional disturbance moderate ; had an attack of dysentery for 15 days during second month. Wound finally healed by granulation, and patient was discharged well after a stay in hospital of 145 days.

b.—Hindu female æt. 50. Tumour of right breast of 2 years' duration ; inflamed and ulcerated 10 months ago ; moveable over pectoralis major ; axillary glands enlarged and indurated ; general health good. Tumour and axillary glands extirpated along with the skin covering the mamma. Portions of pectoralis major and serratus magnus subsequently dissected away because of infiltration ;

edges of wound brought together by button stitches and wire sutures. Operation performed under strict antiseptic precautions. Fell into a state of collapse immediately after, and remained low for two days (temp. 96°). Wound remained aseptic for 6 days, and then became putrid. Diarrhoea set in and sloughing invaded flaps and wound. Symptoms of septic poisoning occurred; purging and vomiting continued; the wound gaped and became gangrenous and death ensued from exhaustion and septicæmia 19 days after operation.

[This was a very severe operation involving great shock and considerable loss of blood. The case promised to do well until, through some accident, putrefaction gained access to the wound. The fatal sequence—diarrhoea, vomiting, septicæmia, gangrene—rapidly followed.]

c.—European female æt. 25. Scirrhus of left breast of one year's duration; ulcerated above nipple; moveable over pectoral muscle; enlarged indurated glands in axilla; mamma with skin covering it removed by two semi-lunar incisions. A suspicious piece of pectoralis major dissected off: axillary glands extirpated: cat-gut drain used. Operation performed under strict antiseptic precautions. Suffered from shock with vomiting and restlessness during the day, followed by smart reaction; went on well for 5 days, when she had a rigor, succeeded by high fever which ranged from 99° to 104°, and lasted to the end. The wound remained aseptic, and repair was in active and satisfactory progress. Diarrhoea, vomiting and smoky urine were observed, and the dressings at once changed from carbolic to boracic acid, thymol lotion being used as spray and for irrigation. The left arm and left side of the face became tensely oedematous; patient became comatose with low muttering delirium. Hypostatic congestion of the lungs set in and death ensued 19 days after operation. On examination of the tumour after death its structure was found to

be inflammatory rather than cancerous. Clinically it presented all the features of malignancy—pain, cachexy, infiltration, rapid but gradual growth and breaking down into a sloughy cavern with indurated base and edges and irregular mammillated surface.

[I am inclined to attribute the unfortunate issue in this case to carbolic acid poisoning. The wound pursued an aseptic course and repair was proceeding actively. The only trace of suppuration which was observed was a little pus which formed at the outer angle. The gastro-enteric irritation, smoky urine, pyrexia and head symptoms point to carbolic absorption. The change of dressings produced no improvement. Thrombosis had apparently taken place in the left axillary and innominate veins. A post-mortem examination could not be obtained.]

2. (a). *Epithelioma of lip*.—Mahomedan male æt. 40 ; 2 months' duration ; involved whole of lower lip, which was thickened, indurated, everted and ulcerated ; lymphatic glands below chin enlarged and a solitary gland on right side of middle line lower down. General health indifferent. Lower lip entirely removed. Vertical incision $1\frac{1}{2}$ inch long carried down to chin and lateral curved incisions from the end of it downwards and outwards ; flaps dissected off. A few labial glands removed and the whole of the enlarged lymphatic glands. Flaps united in middle line and raised so as to form a new lower lip, which was first held up by wire loops secured to a bandage fastened round the head and then by buttons, the wires attached to which were fastened to the teeth. Wound healed mostly by first intention, the triangular wound below the chin by granulation ; suffered from pneumoria and parotitis ; made a satisfactory recovery. Lower lip half covered, the lower teeth and mouth could be closed almost completely. No reappearance of the disease during the 72 days he spent in hospital after the operation.

b. *Epithelioma of the tongue*.—Hindu male æt. 40 ; 5 months' duration ; ragged ulcer on dorsum of tongue near root ; base indurated, and posterior third of organ generally infiltrated ; floor of mouth and gums healthy. Enlarged and indurated glands below inferior border of lower jaw ; general health good. Tracheotomy performed and chloroform administered through tube ; pharynx stuffed with sponge. Incision made in middle line above hyoid bone and mesial aponeurosis of mylohyoid divided ; tongue separated from floor of mouth by scissors ; aneurism needle passed through base and chain ecraseur brought through mental wound ; tongue pulled forward and $\frac{3}{4}$ ths of organ extirpated, remainder removed by ecraseur in two sections. Tracheotomy tube removed next day. Fed with a soft catheter for a few days. Began to sit up and walk about after three days ; wound of floor of mouth healed kindly by granulation, and submental and tracheotomy wounds united rapidly, leaving linear cicatrices. Left hospital 53 days after operation with wounds soundly healed ; could swallow well, and distinguish salt from sugar by taste. Able to articulate intelligibly. Returned in 3 months with recurrence of disease in the floor of the mouth ; faucial aperture much contracted : no further operation resorted to.—(See *Indian Medical Gazette*, Vol. XVI., p. 285.)

c. *Epithelioma of shoulder*.—Hindu female æt. 45. Sustained a severe burn at 16 years of age which caused loss of right pinna, and resulted in cicatricial bands pulling head and face towards right shoulder and established the condition of torticollis. A hard swelling appeared a year ago over spine of scapula resulting in an ulcer with a hard base attached firmly to the bone ; neighbouring tissue much infiltrated and indurated. Ulcerated tumour dissected off and subjacent bone freely removed by gouge and osteotrite ; enlarged lymphatic glands in posterior triangle removed ; cicatricial bands

divided transversely and stitched longitudinally ; flaps taken from the nape of the neck and transplanted on to the side of the neck. A very large wound remained. Operation performed antiseptically ; wound remained sweet and healed very slowly by granulation. Skin grafting attempted twice unsuccessfully. Is still in hospital with a small ulcer about the size of a rupee on the top of the shoulder which is contracting slowly ; has been 230 days under treatment. Wry neck much improved ; no reappearance of disease.

d. Epithelioma of thigh.—Mahomedan male æt. 40 ; 4 years' duration ; situated on inner side of right buttock ; foul ulcer about 1 inch in diameter set on a raised hard base and surrounded by thickened, indurated and infiltrated skin not moveable over subjacent fascia. Mass removed along with fascia, leaving a large open wound about 5 inches long which was left to heal by granulation. This process occupied 76 days. Left hospital with a sound cicatrix and no reappearance of disease.

e. Epithelioma (?) of leg.—Hindu female æt. 48 ; warty looking growth on outside of right leg below knee, of 34 years' duration ; has made rapid progress during last 3 years ; measured 5 in. \times 3 ; ulcerated and fungating at centre ; freely moveable on muscles ; surface tuberculated, raised and indurated ; surrounding infiltration slight. Removed antiseptically with part of subjacent fascia ; edges of wound approximated by button stitches. Wound remained sweet and healed by granulation in 73 days. On examination the growth was found to be of warty rather than epitheliomatous nature. The epithelial cells were confined to the surface, and the hard base was composed of small round cells and cicatricial tissue.

f. Epithelioma of penis. (a).—Hindu male æt. 25 Had soft chancre and phimosis 8 years ago ; latter treated by circumcision, which left an induration which has gradually extended and ulcerated, invading the

glans and body of the penis; growth warty, tubercular or mammillated. Organ removed about an inch from the root, corpora cavernosa divided higher than corpus spongiosum, which was stitched to the edges of a slit in a ventral flap. Bleeding stopped by catgut ligatures. Mass of cancerous lymphatic glands removed from left groin. Dressed with sulphate of iron lotion (gr. x to ʒi.) This did not keep the wounds aseptic. Both suppurated and healed by granulation. The final result was satisfactory. Left hospital 37 days after operation with wounds soundly healed, patent urethra and no sign of recurrence.

b. Hindu male æt. 40; operation of circumcision performed for phimosis three years ago. An indurated sore appeared in the cicatrix 6 months after, which invaded the penis, amputation of which was performed 8 months ago. The disease recurred in the stump and the right inguinal glands became enlarged, indurated and then broke down and fungated; tumour and glands thoroughly extirpated with the skin covering them and the aponeurosis of the external oblique—both pillars and part of Poupart's and Gimbernat's ligament—to which the diseased glands were intimately glued. A very large wound resulted, the edges of which were approximated by button stitches. It was dressed antiseptically and remained sweet. It healed by granulation. Patient left hospital 85 days after the operation with a sound cicatrix, a patent urethra, and no sign of recurrence of the cancer. No tendency to hernia was observed, although the pillars of the outer ring had been removed along with a large piece of the aponeurosis of the external oblique.

[The principal interest of this case, apart from the necessary severity of the operation, consists in the demonstration which it affords that it is the conjoined tendon that constitutes the principal agent in preventing

formation of hernia; the external ring forming a very secondary and feeble adjuvant.]

3. *a.*—*Sarcoma of pharynx. (a).*—Eurasian male æt. 33. Large tumour of pharynx of 6 months' duration; consisted of 2 lobes—one springing from left tonsil, the other attached to posterior wall of pharynx and occupying left half of soft palate as far forwards as the edge of hard palate. Uvula displaced to right side. Aperture of fauces greatly contracted; considerable difficulty in talking and swallowing; tumour seemed to be confined to the pharyngeal wall and left pillars of fauces; tongue not implicated. Laryngotomy performed as a preliminary and tube inserted through which chloroform was administered. Mucous membrane divided by scissors and probe pointed bistoury; tumour separated from surrounding tissue by finger and detached by chain ecraseur. Portions which remained behind removed by scissors. Tube removed after 24 hours. Patient fed through a tube for a month. Parts diligently gargled with Condyl's fluid; wound granulated and healed in 51 days. Uvula was drawn to left side. He was able to speak clearly and swallow comfortably; no sign of recurrence manifest when he left hospital.

(*b*). Same patient returned 75 days after discharge with a recurrence of the tumour. Remained well for a month, when a painful swelling of the throat and left parotid region appeared. A piece of slough separated from the region of the left tonsil, but a tumour remained which was felt to have a smooth rounded surface between the sterno-mastoid and ramus of the jaw. It was pretty movable, and no enlarged glands could be discovered. It was determined to attempt its removal from without. A semi-lunar incision about 2 inches long was made behind the ramus and angle of the lower jaw, the skin and platysma myoides were cut through and the external jugular veins exposed and

ligatured in two places and then cut. The deep fascia was divided and the sterno-mastoid exposed. The facial artery and vein were ligatured and divided; the posterior belly of the digastric and the stylo-hyoid muscles dissected, caught in a catgut loop and held out of the way. The mouth was thrown open by a Smith's gag; the external carotid artery tied and held aside. The tumour was then felt through the wound—which was enlarged by a downward incision at right angles to the first. The tumour was separated by finger and scissors, care being taken to cut in the sound structures outside of it, vessels being promptly tied as they bled by catgut ligatures, the ends of which were left long for drainage. All suspicious mucous membrane was removed by scissors and the morbid mass thoroughly taken away. The wound healed kindly by granulation and was superficial in a fortnight. The patient was fed with a tube for 18 days, and was then able to swallow. He left hospital in good health 35 days after the operation with a sound T shaped cicatrix on the left side of his neck.

[This man underwent both of these formidable operations very successfully. Fuller details of them will be found in the *Indian Medical Gazette* (Vol. XVI., pp. 146, 232). I have recently (7 months after last discharge from hospital) seen him again. There is no recurrence of the growth in the pharynx. He is able to talk distinctly and swallow well, but there is a diffuse infiltration below the left ear about the origin of the sterno-mastoid muscle which forms a swelling and impedes the opening of the lower jaw. This swelling subsided somewhat after being painted with iodine, but there is every reason to fear that the tumour has recurred, and in such a way as to preclude any further operative interference.]

b. *Sarcoma of the neck.* (a).—Mahomedan male æt. 16. Tumour said to have commenced a month ago as

a nodule under the angle of the lower jaw, right side. Had undergone very rapid increase ; is situated in the anterior triangle, pushing the larynx to the left, extending behind body of lower jaw, and forming a swelling in the pharynx, fungating externally. Surrounding tissues œdematous ; outline of tumour ill defined ; very sparingly movable. No enlarged glands ; general health poor ; no specific history. Suffers much from dyspnœa and dysphagia ; face livid ; asphyxiation imminent. Tracheotomy performed on admission : great relief experienced ; colour was restored and dyspnœa subsided ; tube left in for a week and then removed. Had to be reinserted after another week for renewed dyspnœa. The tumour became more defined after the œdema subsided. Two abscesses formed—the one in the left groin the other in the left buttock. They were opened and healed kindly. New nodules began to grow in the neighbourhood of the tumour, and the consent of the patient's guardians having been obtained, an attempt was made to extirpate the tumour 39 days after the tracheotomy. Chloroform was administered through the tube. The skin was divided by a triangular incision whose base was parallel to the lower border of the lower jaw outer side to the sterno-mastoid and inner to the middle. After a prolonged and intricate dissection, during which the patient ceased to breathe and artificial respiration had to be resorted to, the mass was thoroughly extirpated. Part of the sterno-mastoid and the submaxillary gland were removed and the facial superior thyroid and lingual vessels tied ; preliminary ligation was resorted to in separating the deep attachments. The carotid sheath was not involved. The lower jaw was laid bare and subsequently an exfoliation separated from it. The wound was left open and dressed with boracic gauze. It filled up with granulation material and contracted to some extent, but the growth recurred and a similar tumour appeared in the

upper part of the right thigh. Patient emaciated and died of exhaustion 69 days after the operation.

[This patient's life was undoubtedly saved for the time by the tracheotomy. The removal of the tumour was resorted to as the only chance of saving a young life. The operation was extremely difficult and formidable, but recovery took place from the immediate effects of it, and repair of the parts was in progress when local and remote recurrence took place. Further operation could not be recommended, and patient yielded his life very slowly by a process of emaciation and asthenia probably due to secondary visceral deposits. A post-mortem examination was not permitted. The sarcoma was of the small round-celled variety.]

(b.) Mahomedan male æt. 45. Infiltrating tumour of the right side of the neck, of 8 months' duration, situated below sterno-mastoid and extending from the anterior border of the trapezius to near the middle line; very hard; skin movable over it. Seemed to be circumscribed, and was capable of being moved as a mass. Exposed by an incision in the line of the sterno-mastoid, part of which had to be removed. Carotid artery and internal jugular vein were imbedded, and were tied above and below. Pneumogastric nerve dissected out of the tumour. Died of shock 6 hours after the operation.

The tumour was found to be a large spindle-celled sarcoma apparently of glandular origin, and implicating the carotid sheath and right lobe of the thyroid body.

c. *Sarcoma of back*.—Hindu male æt. 46. Had a tumour (fibro-sarcoma) removed from his back in 1880 (see V. 4 a. of precis of 1880); remained well for 4 months when a new growth started at the site of the old. This continued to increase rapidly. Re-admitted, and second operation performed 11 months after first. It was found to implicate the spinal column, and it became

necessary to remove the arches of the last two dorsal vertebræ. Under antiseptic management the wound progressed favourably, but wasting, paralysis and bedsores supervened, and death occurred from exhaustion 91 days after the operation. The tumour was found to be a sarcoma. Secondary deposits were discovered in the liver and lungs, and the bodies of the 12th dorsal vertebra and 2nd, 4th and 5th lumbar were found to have been completely decalcified and converted into fibrous tissue of an embryonic type.

[Full details of this interesting case are given in the *Indian Medical Gazette*, Vol., XVI., page 315.]

4. *a. Fibroma of lower jaw.*—Hindu male æt. 30. Tumour of left side, of 10 years' duration. Removed insufficiently 7 years ago. The portion left behind gradually increased to the size of a large orange. Skin much thinned and ulcerated in two places. Mass exposed by two semi-lunar incisions including thinned and ulcerated skin. Tumour removed by disarticulation of lower jaw. Wound healed above and below by first intention; gaped in the centre; filled up by granulations. Aperture gradually contracted. A second operation needed to obliterate it. Left hospital 75 days after operation.

b. Fibroma of male mamilla.—European male æt. 41. Hard mass about the size of a walnut, of 3 months' growth; gland removed along with nipple and areola. Catgut drain inserted and edges brought together: healed by first intention in 13 days. The mass on examination was found to be a simple mass of fibrous tissue.

5. *Fibro-cystoma of axilla.*—Hindu male æt. 23. Had a boil in the right axilla 8 months ago, which burst and left an ulcer which was neglected and healed slowly. It was succeeded by a swelling in the same region which has grown very rapidly during the last two months. Tumour circumscribed and movable. Extends from outer border of scapula to $1\frac{1}{2}$ inch above right nipple. Soft,

elastic, doughy and painful on pressing; exposed by single incision parallel to lower border of pectoralis major. Did not possess a capsule. Merged into surrounding areolar tissue; intimately connected with veins of axilla. Extirpated by scissors and scalpel; wound closed antiseptically. Suffered from shock for 12 hours. Had feeble reaction with considerable prostration. Diarrhœa and vomiting set in, and he sank exhausted 3 days after operation. The tumour was examined by Professor McConnell, whose description of it is as follows:—

Tumour of axilla.—A multilocular cyst which does not appear to be connected with any large blood vessels; its walls are composed of fibro-elastic tissues, and lined by flat pavement epithelium. The loculi vary in size from that of a sparrow's egg to that of a walnut. They contain glutinous looking fluid which under the microscope exhibits mucoid material with small round mucous corpuscles, epithelium and a few blood cells. In parts walls are thick and semi-solid; when incised presents a honey-combed or cavernous structure from commencing disruption and differentiation into cystic expansions.

6. *a. Glandular tumour of male mamilla.*—Hindu male æt. 22. About the size of an orange; of 5 years' duration; knotty to feel; circumscribed. Removed antiseptically; wound healed kindly. Left hospital in 27 days.

b Glandular tumour of axilla.—Hindu female æt. 50; of 24 years' growth. Increase rapid during last 2 years; lanced by a barber, wound became unhealthy and sloughy; admitted with a large excavation in floor of left axilla, full of putrid pus and maggots, and surrounded by indurated tissue movable on chest wall. Mass dissected out. Axillary artery and vein implicated in indurated mass. They were divided and secured by proximal and distal catgut ligatures, wound left to heal by granulation. The chasm gradually filled up and contracted until now (106 days after operation), but a

small superficial sore remains. Vitality of extremity not impaired. No pulse at the wrist. Little or no constitutional disturbance throughout. Boracic dressing used.

7. *Angioma of ear*.—Hindu male æt. 24. Right pinna enormously swollen; began to swell 5 years ago. Part livid, hot, pulsating. A curved needle was passed beneath the posterior auricular and the branches of the temporal and occipital arteries, supplying the ear, and double catgut threads tied tightly over rolls of boracic gauze. The pulsation stopped at once, the pinna got gradually smaller, cooler and firmer. The ligatures came away in about a fortnight, the part of the threads in contact with the tissues having been almost or entirely absorbed. Small linear ulcers remained which soon healed. Left the hospital 18 days after the operation greatly relieved.

8. *Mucous polypus of mouth*.—Hindu male æt. 16. Admitted with his mouth full of a mass of polypoid material of 4 months' growth which was found to spring from the hard palate; mouth permanently open. Respiration and deglutition greatly impeded. A wire ecraseur was passed over the fundus of the tumour and the narrow pedicle easily severed. Relief was immediate. A subsequent tendency to grow was checked by the application of lunar caustic. Left the hospital in 43 days.

9. *a. Cystic tumour of forehead*—Hindoo male æt. 25. Congenital dermoid cyst above right eyebrow; size of a small apple. Removed antiseptically by single incision. Healed by first intention. Discharged in 22 days.

b. Cystic of back—Sebaceous cyst behind left shoulder, of 2 years' growth, about the size of a mango. Removed antiseptically. Wound healed almost entirely by first intention. Discharged in 19 days.

c. Cyst of foot.—Situated in front of left ankle; of 5 years' duration. Removed antiseptically by single incision. Remained sweet and healed in 28 days.

10. *a. Removal of elephantiasis of the scrotum. (a).—*Hindu male æt. 17 ; 2 years' duration. Slight enlargement of spleen. Health otherwise good. Penis unaffected, not decorticated. Scrotum removed under antiseptic precautions. Testes stitched together and to surface of wound by catgut ; lateral flaps brought together over them by continuous catgut suture. Healed in 58 days. Tumour weighed 6 oz.

(*b.*) Hindu male æt. 19 ; 4 months' duration ; health good. Removed antiseptically ; flaps taken from thigh to cover testes which were stitched together as in case (*a.*). Left hospital 60 days after operation. Tumour weighed 12 oz.

(*c.*) Hindu male æt. 35 ; 6 years' duration ; large double hydrocele. Removed bloodlessly and antiseptically ; flaps taken from thighs ; testes stitched as in case (*a.*). Discharged in 64 days. Tumour weighed 3 lbs. 10 oz.

(*d.*) Hindu male æt. 40 ; 1½ years' duration. Ulcer on fundus ; abscess on dorsum of penis. Tumour removed antiseptically ; flaps cut from thighs ; testes stitched. Healed in 34 days. Weighed 13 oz.

(*e.*) Mahomedan male æt. 32 ; 12 years' duration. History of hydrocele on both sides ; health good. Tumour removed bloodlessly and antiseptically ; flaps taken from thighs and testes stitched. Tunicae adherent to testes. Right contained a large quantity of jelly-like lymph. Wound remained aseptic. Discharged in 94 days. Tumour weighed 1 lb. 11 oz.

(*f.*) Hindu male æt. 40 ; one year's duration ; beads of dilated lymphatics on fundus. Tumour removed antiseptically ; tunicae found adherent to testes. These were stitched together and placed in pockets which were formed by separating the deep layer of the superficial perineal fascia from the subjacent structures. The lateral flaps so formed were stitched by continuous

catgut suture over the testes. Wound remained aseptic and healed in 71 days. Weight of tumour 13 ounces.

(g.) Hindu male æt. 26 ; 4 years' duration. History of syphilis 8 years ago ; admitted in an inflamed condition ; on the inflammation subsiding an operation was performed as in case (f). Repair took place satisfactorily in 64 days ; an abscess formed in right groin which was opened antiseptically and healed in a few days. Slight hydrocele existed on both sides. Tumour weighed 13 ounces.

(h.) Hindu male æt. 55 ; 20 years' duration. Operation as in case (f) ; wound remained aseptic, and was progressing satisfactorily when tetanus supervened on the 8th and carried the patient off on the 9th day after operation. Tumour weighed 3 lbs. 8 oz.

(i.) Hindu male æt. 22 ; 4 years' duration ; history of gonorrhœa and double bubo ; general health good. Operation as in case (f). Pursued an aseptic course. Discharged 45 days after operation. Tumour weighed 8 ounces.

(j.) Mahomedan male æt. 28 ; 3 years' duration ; history of gonorrhœa followed by orchitis. Hydrocele on right side. Tumour removed as in case (b). Repair progressed satisfactorily. Discharged in 97 days. Cicatrization of penis slow. Tumour weighed 2 lbs. 4 oz.

(k.) Hindu male æt. 45 ; 20 years' duration ; history of hydrocele. Health good. Removed as in case (f). Wound remained aseptic and healed in 49 days ; tunicae adherent to testes ; lymphatic beads on scrotum ; lining membrane of prepuce left behind. It became œdematous and then thickened. Tumour weighed 2 lbs. 1 oz.

(l.) Hindu male æt. 41 ; 3 years' duration ; history of double hydrocele which was tapped and injected. Operation as in case (f) : tunicae adherent to testes ; suffered from high fever and smoky urine preceded by roseolar eruption for five days. Carbolic dressings discontinued ; iodine irrigation and boracic dressings used. Wound

continued aseptic and healed satisfactorily in 37 days. Tumour weighed 14 oz.

(*m.*) Native Christian male æt. 40 ; 8 years' duration; history of syphilis ; numerous ulcers on penis, scrotum and right leg. Operation as in case (*f.*) Tunica adherent to right testis ; small hydrocele on left side. Wound remained aseptic but healed slowly. Discharged in 102 days. Weighed 2 lbs. 6 oz.

(*n.*) Hindu male æt. 30 ; 3 years' duration. Enormous hydrocele on right side and very large on left ; phimosis of penis, which was otherwise unaffected. Hypertrophied fundus of the scrotum removed by elliptical incision ; hydroceles emptied ; redundant tunicæ clipped off ; testes stitched as in case (*a.*) ; phimosis slit. Operation performed antiseptically. Wound remained aseptic, and healed in 24 days. Patient discharged in 35 days. Tumour weighed 1 lb. 10 oz.

(*o.*) Hindu male æt. 30 ; 10 years' duration ; hæmatocele on right and hydrocele on left side ; skin of penis sound not removed ; thickened portion of scrotum taken away by elliptical incision. Tunicæ emptied and pared off ; testes stitched as usual ; lateral flaps brought over them. Operation performed antiseptically. Wound remained sweet and repair was in satisfactory progress when tetanus set in on 13th day and carried him off on 21st after operation.

(*p.*) Native Christian male æt. 40 ; 4 years' duration ; hæmatocele on right side and hydrocele on left. Operation as in case (*o.*) Wound remained aseptic and healed in 56 days. Tumour weighed 17 oz.

(*q.*) Mahomedan male æt. 27 ; 5 years' duration. Immense hydrocele on left side, a small one on right. Operation as in case (*o.*) Wound putrefied and became sloughy. Surrounding tissues œdematous and excoriated. Suffered from pyrexia. Tetanus set in on 9th day and

carried him off on 12th day after operation. Tumour weighed 12 oz.

(r.) Hindu male æt. 40 ; 2 years' duration. Hæmatocele on right side and hydrocele on left. Operation as in case (o.) Wound putrefied and some sloughing took place from the surface of the cords. On the separation of the sloughs healthy repair set in and was completed in 61 days. Tumour weighed 14 ounces.

(s.) Mahomedan male æt. 40 ; 3 years' duration. Immense hydrocele on right side, a small one on left. Health indifferent. Operation as in case (o.) Right tunica contained a large quantity of jelly-like lymph material. As much of the redundant tunica as possible removed by scissors. Flaps brought over testes to within $\frac{3}{4}$ th of an inch. Wound remained aseptic and healed without suppuration. Discharged in 30 days. The mass which was removed weighed 1 lb. 4 oz.

(t.) Mahomedan male æt. 30 ; 12 years' duration. Right oblique inguinal hernia of 5 years' duration ; double hydrocele ; spleen much enlarged, liver slightly so ; in the habit of consuming 12 grs. of opium daily. Tumour removed antiseptically and bloodlessly. Flaps taken from thigh. Sac of hernia dissected out, ligatured at neck and cut off ; stump reduced into canal, pillars and sides of canal brought together by iron wire. Suffered from shock and strong reaction ; symptoms of septicæmia appeared on 6th day. Wound putrid and sloughy. The unhealthy action extended, bedsores formed and patient sank of exhaustion 12 days after operation. No symptom of peritonitis.

(u.) Hindu male æt. 45 ; 7 years' duration. Right oblique inguinal hernia (scrotal) of 5 years' duration. Scrotal tumour removed as usual. Sac of hernia dissected out. Spermatic artery accidentally wounded, castration of right testicle performed in consequence. Sac ligatured at neck and cut off : stump reduced. Pillars and sides of

canal brought together with two double catgut threads ; some suppuration took place around the stump of the cord requiring the use of a drainage tube, otherwise the wound pursued the usual aseptic course, and patient left hospital 67 days after the operation with a sound cicatrix. The right inguinal canal was blocked up, the ring obliterated, and there was no impulse nor tendency to hernial descent. The tumour weighed 4 oz. 6 lbs.

(v.) Hindu male æt. 30. Penis, scrotum and pubis covered with a large serpigenous ulcer of 6 years' duration, which commenced with a soft chancre. Scrotum enlarged (elephantoid). Ulcer dissected off and thickened scrotum removed ; penis dissected out of cicatricial mass ; flaps taken from thigh and stitched over testes, which were also stitched together and to surface of perinæum. Operation performed with antiseptic precautions ; flaps united and wound which remained aseptic healed kindly. Cicatrization of penis very tedious. Discharged in 123 days.

(w.) Hindu male æt. 25. A large serpigenous ulcer on scrotum, pubis and groins following chancre and bubo contracted 4 years ago ; penis completely embedded in cicatricial mass ; scrotum much thickened ; edges of ulcer papillomatous. Ulcer dissected off including the tuberculated edge, except from right groin ; penis freed and thickened, scrotum removed ; flap taken from left thigh : testes stitched as usual. Repair of the large wound very tedious. After a stay in hospital of 225 days he left with a sound cicatrix. Mass removed weighed $11\frac{1}{2}$ oz.

[These cases range themselves into distinct categories according as the operation was performed for—1. Simple scrotal tumour ; 2. Hydrocele or hæmatoccele or both with some degree of scrotal hypertrophy ; 3. Scrotal tumour complicated with hernia, and 4. Serpigenous ulceration associated with more or less thickening of

the scrotal and penile tissues. 1. To the first category belong cases *a—m.*—13 in all. These cases were operated on under strict antiseptic precautions, the parts being thoroughly washed with a 1—20 carbolic lotion before the operation, and the spray kept in full play during the operation and dressing. Precautions were also taken to minimise bleeding by the use of an elastic bandage before the operation and an elastic cord encircling the neck of the tumour during it, the latter being held back in most cases by being attached by means of tapes to a waist-belt. The penis and testes were exposed and isolated in the usual manner and the mass removed by circular incision; as much skin as was really sound being left at the sides. In all cases the raphe was freely removed, because experience has shown that it is peculiarly prone to undergo thickening. In one case of this series (*a*) the skin of the penis was not removed because it had undergone no thickening. In decorticating the penis care is taken to remove every scrap of integument including the lining membrane of the preputial cavity. In one case this was left, and underwent oedematous thickening. In all cases the tunica vaginalis was opened, unless adherent from previous inflammation naturally occurring or artificially induced. This step is necessary in order to prevent future hydrocele. The membrane was pared off to within a quarter of an inch of its reflection from the surface of the testis on one side and the epididymis on the other. This collar is left for the purpose of stitching. This is accomplished in the following way. A needle is threaded with carbolised catgut, the testes are sewn together by continuous suture by means of the collar of tunica vaginalis left attached to them, care being taken to leave the epididymis outside. The outer rim is then sewn to the surface of the perinæal wound. Latterly I have found it best to attach the inner rims to the centre of the perinæal tissue and

leave the out rims free. In a certain number of the cases rectangular flaps were cut from the skin of the thigh, and these were transplanted over the testes and attached to each other by continuous catgut suture (cases *b* to *e*), leaving a triangular wound on the thigh to heal by granulation. In other cases pockets were constructed for the accommodation of the testes by following the deep layer of the superficial perinæal fascia down to the arch of the pubis. The lateral flaps so formed are dragged by continuous catgut suture over the testes and the edges brought within an inch or so of each other in the middle line. This is the plan I invariably adopt now. By either method the testes are securely fixed in proper position, and covered either partially or entirely by skin. When the cords are long or voluminous, as they often are in cases complicated with hydrocele or hæmatocele, they are simply left to form a loose mass at the root of the penis. When these various steps are completed the wound is carefully washed with a 1—20 carbolic lotion and dressed. A strip of boracic gauze (gauze spread thinly with boracic ointment) is first wound round the root of the penis in order to prevent its becoming imbedded. The body of the organ is then clothed with another strip. Pieces of the same material are then applied to the surface of the testes. Over these are applied layers of carbolic gauze secured in position by a gauze bandage. A piece of waterproof paper envelopes the whole, and the dressings are finally secured by a bandage encircling the thighs and pubis and crossing over the perinæum, and thus securing the close application of the borders of the dressing to the wound. The dressings are changed every day for the first fortnight or three weeks, then every second or third day according to the amount of discharge. When cases are thus treated the process of repair takes place in the following manner. The wound is filled with lymph

which infiltrates the cords and causes them to swell somewhat. When the cords are long and voluminous a tumour of considerable size forms at the root of the penis. The testes remain embedded in their pockets without any perceptible change except that all spaces between and around them are filled with lymph. The sutures are embedded in this material which forms a putty-like cement, filling up the wound from edge to edge and presenting a straw-coloured surface marbled with blood clots. In a week or 10 days this becomes vascularized, shreds of lymph peel off and the surface becomes red and granular. The mass now undergoes rapid absorption. Cicatrization commences at the edge and rapidly extends from every side towards the root of the penis. The testes are covered in with skin, and finally a cicatricial circle ascends from the root of the penis and descends from the corona glandis, and in about 6 weeks the whole is covered. During the process it is important to prevent the penis being drawn into the cicatrizing mass. This may be done by diligently keeping the root free and perhaps snipping the granulations through on its under surface if they threaten to retract the organ too much. No pus formation occurs if the wound remains aseptic, and putrefaction is very rarely perceptible. If any sign of it becomes evident the free use of tincture of iodine suffices to extirpate it.

Of this series of cases only one died of tetanus which supervened while the wound was in process of normal (aseptic) repair. The average weight of the tumours was 1 lb 6 oz., and the mean period of detention in hospital 64 days. The plan of operation and dressing adopted in these cases results in a great saving of suffering, constitutional and local, obviates all offensive odour, diminishes mortality and reduces the period of detention in hospital.

2. The second series (*n*—*s*) of 6 cases include those in which large hydroceles and hæmatoceles were complicat-

ed with hypertrophy of the scrotal integument, the skin of the penis remains healthy. These were treated by liberal removal of the redundant and thickened scrotum ; isolation of the testes, removal of superfluous tunica, stitching of the testes together and of the remains of the scrotum over them. This was done under antiseptic precautions, and in 4 of the cases repair took place by vascularization and organization of effused lymph as in the first series. The period of repair was shorter, averaging 45 days. In one of the cases which putrefied tetanus occurred and proved fatal, and the same disease carried off another case in which aseptic repair was progressing satisfactorily. In the other septic case repair was slower than in the aseptic.

3. In the 2 cases complicated with hernia (*t* and *u*) in addition to the ordinary operation described above the sac was amputated after catgut ligature of its neck and the canal closed by the same material. Fatal septic poisoning occurred in one case after putrefaction had invaded the wound. The other, in which castration of one testicle was performed, made a satisfactory and complete recovery.

4. The last series of 2 cases (*v* and *w*) supply an illustration of a disease which is occasionally met with in India, namely serpigenous or lupoid ulceration of the genitals. The process commences with a venereal sore (chancroid) ; from this as a centre or starting point or from a bubo resulting from it, ulceration gradually and very slowly spreads. The skin becomes tuberculated, the neoplasm breaks down and a circle of ulcer results, which is succeeded by an imperfect cicatrix. The scrotal and penile skin are destroyed, these organs get involved in a mass of cicatricial material and the ulceration spreads by circles and bays into the groins, thighs and buttocks. Excision is the most easy and effective treatment, but scraping and the thorough use of strong

caustics is also sufficient to extirpate the disease. In the cases on record the penis and testes were dissected out of the cicatricial mass, and treated on the same principles as after amputation of a scrotal tumour].

b. Elephantiasis of the clitoris and labia.—Hindu female æt. 30 ; 2 years' duration following syphilis, for which she was salivated. Preputium clitoridis formed, a large pendulous mass about the size of an orange. Both labia majora and minora hypertrophied. All the hypertrophied tissue was removed, the clitoris being left behind, and the wound dressed with boracic ointment and a catheter retained permanently in the bladder. Repair took place in 59 days. The parts removed weighed 8 ounces.

11. *Inflammatory tumour of Mamma.*—Mahomedan sweeper æt. 22. Disease of 6 years' duration. Resulted from an abscess. A sinus remained which obstinately resisted all efforts to close it. The axillary glands of the right side were enormously enlarged, one of them had suppurated and burst and given rise to a sinus in the axilla. Mamma indurated and hypertrophied. As the patient's health was suffering from the prolonged discharge and continued irritation, it was thought best to remove the whole mass. This was done antiseptically. A spiral wire drainage tube was found in the interior of the axillary sinus. The axillary glands were found to be undergoing caseation. The operation was a severe one, patient lost a good deal of blood. She suffered from severe shock from which she did not rally, and died 30 hours after the operation.

12. *Excision of external and internal piles.* (a.)—Mahomedan male æt. 50. Internal piles of 3 years' duration ; bleeding and prolapsus. Very anæmic and feeble. Removed by clamp, scissors and cautery ; very little blood lost. Patient had constant involuntary loose motions, and died of exhaustion in 3 days.

(b.) Hindu male æt. 55. External piles of 6 years' duration. Bled after stool. In a sloughy condition. Removed radially by clamp, scissors and cautery ; morphia suppository inserted. Discharged in 20 days with a sound anus ; no contraction or incontinence.

(c.) Mahomedan female æt. 55. External piles of 6 months' duration associated with fissure. Piles removed with scissors and fissure divided. Discharged in 32 days quite cured.

(d.) English male æt. 39. External piles of 9 years' duration, encircling anus and bleeding after stool. Removed in sections radially by clamp, scissors and cautery ; suppository inserted. Operation followed by retention. Slight bleeding on 4th day. Discharged in 26 days after a satisfactory recovery.

[Case *a.* died of exhaustion due mainly to the disease. In the other three cases though the tumours were situated outside the anal opening, the hæmorrhoidal swelling extended in ridges into the gut, and the clamp was made to embrace these prolongations]

V.—*Lithotomy.* *a.*—Hindu male æt. 35. Symptoms of stone first noticed 25 days before admission. Had retention on the day preceding. Stone impacted in prostatic urethra. Extraction per urethram failing, perinæal section was performed ; calculus slipped back into bladder on trying to catch it. A lateral division of the prostate was made and a small uric calculus weighing 15 grains easily withdrawn. Discharged well in 23 days.

b.—Mahomedan male, æt. 35. First symptoms 5 months ago. Urine frequently stopped ; stream diminished ; stone felt in urethra. It could not be caught by urethral forceps, and median lithotomy was performed. A small phosphatic stone weighing 9 grains was extracted through the perinæal wound. Passed water entirely through urethra in 6 days, and was discharged in 22 days.

c.—Hindu male, æt. 5. Symptoms commenced when he was a year old : great urinary irritation and temporary obstruction occurred at intervals. A calculus discovered on sounding. Lateral lithotomy was performed and a uric stone weighing 120 grains extracted. Made water entirely through penis after 16 days, and was discharged in 23 days. Wound suppurated.

2. *Lithotrixy*. a.—Hindu male æt. 30. Symptoms of $1\frac{1}{2}$ year's duration. A stone about $1\frac{1}{2}$ inch in diameter was discovered on sounding. It was crushed on three successive occasions ; the intervals were 6 and 7 days. No attempt was made to evacuate by instruments. Chloroform was given on the first occasion, but not on the last two ; very little irritation resulted from these operations, and he left hospital 7 days after the last crushing quite free of stone and in good health in every respect.

b.—Hindu male æt. 45. Symptoms of one year's duration. Passed a calculus 2 years ago. Stone small, and crushed at one sitting under chloroform. A little bleeding and irritation followed, but he left hospital in 5 days quite relieved of his symptoms. No stone could be detected on careful sounding.

c.—Mahomedan male æt. 33. Symptoms of 2 years' duration ; patient labouring under phthisis ; small stone (probably phosphatic) detected. It was crushed on two occasions at 15 days' interval. Slight irritation, but no bleeding followed the first operation. Left hospital 3 days after second crushing which was done without chloroform ; quite relieved. No sign of calculus detected by sound.

[These operations were performed with Weiss's lithotrites (Thompson's), Bigelow's instruments not being available. Repeated crushings were resorted to ; under chloroform on the first occasions ; a fenestrated female blade being first used and then a solid one. In one case a single operation sufficed, in another a second and in

another a third was necessary. Great help was experienced from the finger in-recto which gives precision to the operation and guides the fragments into the grasp of the lithotrite],

VII. 1. *Tracheotomy. a.*—Hindu male æt. 35. Laryngitis with œdema glottidis of 2 days' duration; dyspnœa extreme; relieved at once by opening the windpipe. Left hospital quite recovered of both disease and wound in 35 days. [In the remaining four cases tracheotomy was performed as a preliminary to operations in the mouth and pharynx—(see V. 2. *b.*, V. 3. *a.*, V. 3. *b.* (*a.*), and VIII. 2). In each of these cases great comfort and safety were secured by diverting the respiratory current from its usual route].

2. *Herniotomy. a.*—*With opening sac. (a.)*—Hindu male æt. 38. Right inguinal hernia of 7 months' duration. Irreducible for 58 hours before admission; size of foetal head; tense and painful. Ice applied and taxis tried without effect with and without chloroform; vomiting, restlessness, feeble pulse, cold extremities, clammy perspiration. Operation performed 15 hours after admission. Sac exposed by oblique incision over external ring. Hernia could not be reduced; sac laid open. Contained omentum and intestine. Latter could not be reduced till former was removed after ligature in sections with catgut. Contents of hernia then replaced in peritoneal cavity; neck of sac tied with three loops of catgut; stump placed in inguinal canal; body amputated. Pillars and sides of canal brought together over cord with 2 double catgut stitches; ends left long for drainage. Skin wound brought together with iron wire and horsehair. Operation performed with antiseptic precautions. Never rallied; vomiting and symptoms of collapse became aggravated. Died of shock 8 hours after operation.

(*b.*) Mahomedan male æt. 45. Right oblique inguinal

hernia (scrotal) of 10 years' duration. Came down 8 hours before admission ; painful, tense and œdematous locally. Suffering from vomiting, tympanitis, hurried breathing, dry coated tongue and symptoms of collapse. Ice applied for 3 hours and taxis tried under chloroform without effect. A small hydrocele was emptied and the hernial tumour punctured in 3 places, but it still resisted reduction ; sac exposed and laid open. Cœcum found in a gangrenous state. It was opened and a large hæmatoma found in its interior ; on emptying this the gut returned. The edges of the opening were stitched to those of the wound and a boracic dressing applied. Patient became restless and suffered greatly from shock after the operation : breathing hurried, pulse almost imperceptible. Abdomen swelled and became tender. He died in 12 hours.

b. Without opening sac.

Hindu male æt. 30. Right inguinal hernia of 10 years' duration : descended an hour before admission. Taxis with and without chloroform tried in vain ; opium enemata, and continuous application of ice employed for 5 hours without effect. Sac exposed ; stricture at external ring divided ; contents returned without opening sac. Sac invaginated and secured in canal by catgut loop passed through abdominal wall opposite internal ring ; pillars and sides of canal brought into contact with 3 strong catgut sutures ; ends left long for drainage ; skin wound stitched with horsehair. Restless and delirious during first night ; removed dressings and exposed wound. Had two motions containing blood. Scrotum swelled and suppurated ; counter-opening made through which in time a large mass of membranous slough (? the sac) was removed. Drainage tube passed through suppurating tract, which eventually granulated, the wound having been rendered aseptic by iodine injections. Discharged in 57 days, with depressed cicatrix at fundus of scrotum,

which was of natural size. Oval depressed cicatrix in groin. A large mass of indurated cicatricial material in canal and around cord. No hernial impulse nor descent. Apparently a thorough radical cure.

3. *Operations for the radical cure of hernia.*

a. Wood's operation. (a).—English seaman æt. 47. Right oblique inguinal hernia of 17 years' duration; ring admitted 3 fingers. Wood's operation performed antiseptically. Remained in hospital 132 days. Hernia returned; canal contracted and truss more effective.

(b).—European seaman æt. 40. Right oblique inguinal hernia of 15 days' duration; ring very wide. Wood's operation performed antiseptically. Left hospital in 27 days apparently cured.

b. Antiseptic operation with catgut.

(a).—European male æt. 50. Right oblique inguinal hernia of 6 years' duration, caused by a fall. Commanded by a truss till the day before admission, when it descended and could not be got back. Was reduced in hospital after application of ice. Ring admitted three fingers. Habits intemperate; suffered from chronic bronchitis. Kept under observation for 20 days. Rupture descended on slightest provocation, and was not controlled by truss. Was anxious for radical cure. Operation performed under strict antiseptic precautions; neck of sac exposed by dissection and tied at internal ring by catgut ligature. Pillars and sides of canal brought together by double catgut ligature; ends left long for drainage. Had strong reaction. Became delirious and passed water involuntarily, soaking dressing; wound did well for 4 days then gaped, became sloughy and putrid; diffuse suppuration spread down into the scrotum and between the abdominal muscles. Some redness observed on right buttock: got high fever with delirium, vomiting, diarrhoea and great prostration. Lung symptoms observed a few

days before death. Died exhausted 8 days after operation. Secondary abscesses found in lungs; no peritonitis. Sac not inflamed; neck impermeable; ligature imbedded in lymph.

(b.)—Hindu male æt. 30. Right oblique inguinal hernia (bubonocoele); occurred 5 days ago in a street row. Painful swelling of the size of a hen's egg suddenly formed in groin; was reduced soon after. Ring dilated; distinct impulse on coughing. Cord exposed by dissection; no sac found; pillars and sides of ring united by three double catgut ligatures. Operation performed antiseptically. Wound remained sweet and healed by first intention in a week. Left hospital 43 days after operation; ring contracted round cord. Considerable cicatricial thickening; no impulse. Cicatrix linear; depressed in centre and adherent to cicatricial mass.

(c.)—Hindu male æt. 35. Right oblique inguinal hernia (scrotal) of 2 years' duration. Painful and irreducible on admission, but went back after 6 hours' application of ice. Ring admitted 4 fingers. Operation performed with strict antiseptic precautions 2 days after admission. Cord exposed by dissection; neck of sac isolated and tied with two catgut ligatures at a short distance from each other. Pillars and sides of ring brought together by 2 double catgut threads, ends left long for drainage. Operation succeeded by typhinitis which lasted for a few days. Wound remained sweet till 5th day, when some putrid pus escaped on pressure. Became aseptic on 13th day after diligent antiseptic treatment. Healed mostly by first intention. Patient left hospital 31 days after operation; ring firmly contracted round cord; no impulse. Sound linear cicatrix in groin.

(d.)—European (English) male æt. 39. Right oblique inguinal hernia (scrotal) of 14 years' duration. Rupture frequently came down in spite of truss. Ring and canal admitted 2 fingers. Cord exposed by dissection. Sac

invaginated and secured by loop passed through abdominal wall a little above and outside of site of internal ring; pillars and sides of canal brought together by 2 strong catgut ligatures; ends left long for drainage. No fever or peritoneal irritation. Wound healed by first intention. Drain came away on 12th day; wound completely healed 4 days afterwards. Left hospital 91 days after operation. Ring closed and firmly adherent to cord. Canal occupied by indurated mass. No impulse nor descent.

(e.)—European male æt. 32. Left oblique inguinal hernia of one year's duration (bubonocoele). Rupture descended on standing. Ring admitted two fingers. Cord exposed by dissection; no sac found; veins of cord varicose; tied with two catgut ligatures at the interval of one inch; pillars and sides of canal brought together by 2 double catgut ligatures, ends left long for drainage. No fever or peritoneal irritation. Wound healed by first intention. Catgut drain came away in 10 days. Left hospital 13 days after operation. Seen a few weeks afterwards. A hard mass bulged through the canal on coughing (epiplocele); obliged to wear a truss.

(f.)—Hindu male æt. 14. Left oblique inguinal hernia (scrotal) of 12 years' duration (qy. Infantile). Descended on the slightest exertion. Ring and canal very large, admitting three fingers. Cord exposed by dissection; cremaster muscle hypertrophied; neck of sac isolated; tied in two places by stout catgut thread and divided between. Stump reduced into canal, sac left in scrotum. Wound remained sweet for two days, then became putrid and suppurated; sloughing cellulitis extended into abdominal wall and scrotum. Sac suppurated and required free incision. Considerable constitutional disturbance accompanied these processes. Wounds finally healed soundly by granulation. Left hospital 93 days after operation with a depressed linear cicatrix in left groin. Canal

closely adherent to cord ; no impulse or descent. Scrotum of natural size.

(g.) Hebrew male æt. 50. Left oblique inguinal hernia (scrotal) ; underwent operation for its radical cure 20 years ago. Remained well for 4 or 5 years, then returned. Tumour very large ; canal very wide ; scrotum very voluminous ; truss ineffective. Cord exposed by dissection. Sac separated from cord ; neck tied with three catgut loops and body amputated. Stump reduced into canal and pillars, &c., brought together by 3 double catgut threads, ends left long for drainage. Had tympanitis without fever for a few days ; wound remained aseptic and healed by first intention. Reparative process slow. Left hospital 68 days after operation with a depressed cicatrix in the groin ; canal closed ; no impulse or tendency to descent.

(h.)—Eurasian male æt 38. Right oblique inguinal hernia of one year's duration. Operated on twice by Wood's method [*vide* precis of 1880, VI. 3, (d.) (e.)] Descended a third time soon after the last operation (performed on 20th June 1881). Re-admitted 21st March 1882. Sac exposed by dissection, separated from cord, invaginated and retained in canal by catgut loop passed through abdominal wall opposite internal ring. Pillars and sides of canal brought together by double catgut sutures, ends left long for drainage. Operation performed under strict antiseptic precautions ; wound remained aseptic. Had some tympanitic distension but no fever. Healed by first intention. Left hospital in 56 days ; no hernial descent. Ring contracted round cord. Some impulse felt on coughing. It has been ascertained that the hernia returned after he left hospital.

[These records contain notes of 14 cases in which operations were performed for the radical cure of oblique inguinal hernia. Two of them were cases of scrotal tumour [V. 10. a. (t) and (u)] in which in addition to

the removal of the tumour, the sac of the hernia was ligatured at the neck, the fundus amputated and the pillars and sides of the canal brought together by strong catgut sutures. In one castration was performed on the same side in consequence of accidental wound of the spermatic artery. One of these cases died of septicæmia due to putrefaction of the external wound; the peritoneum was found healthy and neck of the sac in process of obliteration on post-mortem examination. In the second case a satisfactory radical cure was obtained.

Two were cases of herniotomy for strangulation. [VII. 2. *a* (*a.*) and *b.*] in one of which a large mass of omentum was removed after ligature in sections, the sac dissected off the cord, neck tied and the pillars, &c., brought together. The hernia had been down for 58 hours, patient was in a state of collapse, and died in 8 hours of shock and exhaustion. In the other after reduction of the hernia without opening the sac, this was invaginated and held in the canal by a catgut loop passed through the abdominal wall; the pillars, &c., being brought together by 3 strong catgut loops. Suppuration occurred in the scrotum requiring free counter-opening; the sac came away in the form of a slough through this opening, and the patient made a good recovery with radical cure of his hernia.

In two cases [VII. 3. *a*. (*a*) and (*b*) Wood's wire operation was performed with apparent radical cure in one instance and benefit in the other; the canal being contracted and a truss rendered more effective.

In the remaining 8 cases more direct measures were resorted to with a view to obliteration of the sac cavity and approximation of the canal walls.

In two cases of this series (*b*) and (*e*)—after exposing the cord by direct dissection, dividing its coverings and examining the canal no sac could be found, the pillars were brought together by catgut ligatures on

Wood's principle. In one a radical cure was obtained. In another a bubonocoele was discovered on subsequent examination. In this last case varicose veins of the cord were tied with catgut and a cure of a varicocele effected.

In two others (*d*) and (*h*) the sac was exposed by dissection, invaginated into the canal, held in that position by a catgut loop and the pillars, &c., brought together. In both aseptic repair took place rapidly and a radical cure was apparently accomplished. In another case (*c*) the neck of the sac was dissected from the cord, tied in two places and left *in situ*, the pillars, &c., being secured by catgut. In this case also a satisfactory result was obtained. In two cases (*a*) and (*b*) the neck of the sac was isolated, tied in two places and divided, the stump being reduced into the canal and the body of the sac left in the scrotum, the pillars, &c., being subsequently brought together. In one case putrefaction invaded the wound, sloughing cellulitis extended into the abdominal wall, and death took place in 12 days from pyæmia. In the others a scrotal abscess formed, but a radical cure resulted. In the last case (*g*), the sac was dissected out *in toto*, the neck tied and the rest removed. In this case aseptic repair occurred and a radical cure was effected. This is the operation which I now invariably perform, and it seems to me to be the most promising. It combines—1, an assurance of obliteration of the sac; 2, occlusion of it at the internal ring; 3, plugging of the canal from within; and 4, approximation of the sides of the canal after the manner of Wood. It secures all the advantages of Wood's operation with greater precision and accuracy, inasmuch as everything is done under the eye; it removes the two great disadvantages of Wood's operation, namely uncertainty regarding the treatment and fate of the sac and invagination of structures from without, which have a constant tendency to be pulled out; and it

provides a solid plug from within which assists in closing and corking the canal, and must materially aid in preventing subsequent descent. I have performed a number of operations of this kind since the close of the year which I shall relate and discuss in the precis for 1882. Of the whole 14 cases, 3 died of the causes above specified; 9 presented every indication of radical cure, and 2 resulted in a condition of parts more favourable for the effective application of a truss.]

4. *For Fistula in Ano. a.*—Hindu male æt. 40; 7 years' duration; 3 external and one internal opening; external piles; fistula laid open and piles removed by scissors. Left hospital quite cured in 18 days.

b.—Hebrew male æt. 46. History of rectal trouble of one year's duration; discharge of pus with every motion and much pain. Hard obscurely fluctuating swelling over right ischio-rectal fossa. This was laid open and an abscess was found which communicated with the rectum by a small aperture. An operation was performed as for fistula. Considerable hæmorrhage ensued during next 12 hours. The wound granulated kindly but slowly. Recovery delayed by formation of an abscess on under surface of urethra. It was laid freely open and healed rapidly. Discharged in 43 days.

c.—Hindu male æt. 45. An indurated brawny track extended from the rectum across each gluteal region. It was riddled with sinuses starting from a strictured part of the gut about 2 inches from the verge of the anus. History of syphilis. All the fistulæ were freely laid open. They healed by granulation. The calibre of the rectum was restored by bougies and patient left hospital in 171 days, cured both of fistulæ and stricture, no incontinence.

5. *Perinæal Section. a.*—Hindu male æt. 28. A boatman. Fell on a pole some days before admission and lacerated his urethra; perinæum swollen hard, tense; penis œdematous;

bladder distended. Free opening made in the middle line of the perinæum ; floor of urethra found extensively destroyed ; wound sloughy ; patient in a state of prostration, with diarrhœa and hiccup : this lasted for about 10 days. The wound cleaned and contracted, and the general condition improved. A sinus extending towards the rectum had to be slit open. The perinæal fistula remaining widely open, a plastic operation was performed 97 days after the perinæal section. Flaps were made at the sides of the opening and brought together by horse-hair stitches. This reduced the opening to a very small size. A No. 12 catheter was passed every few days, and the most of the urine passed by urethram. He became impatient of treatment, and left hospital 20 days after the last operation.

b. Hindu male æt. 20. Ruptured his urethra 2 days before admission by falling on an iron rod. Blood passes from the urethra, and the perinæum is hard, tense, tender and swollen. Freec incision made in the middle line, clots cleared out, No. 10 catheter passed into bladder and wound dressed with boracic gauze. The most of the urine at first passed through the wound which granulated and contracted. As it contracted a larger proportion, in 23 days the whole passed per urethram. Left hospital 26 days after the operation.

c. Hindu male æt. 30. Urinary fistula in left groin consequent on an abscess in the left inguinal region, opened $1\frac{1}{2}$ month before admission ; perinæum painful, swollen and fluctuating. Incised in middle line. A large quantity of pus escaped ; urethra incised to extent of $\frac{3}{4}$ th in. Inguinal fistula gradually closed and then the perinæal. A full sized catheter was passed every third day, and he left hospital in 72 days without either stricture or fistula. [The fistula in this case was evidently due to pelvic cellulitis caused by urinary abscess forming behind the triangular ligament.]

d. Hindu male æt. 30. Ruptured his urethra by falling on a bamboo from a height of 6 or 7 feet about 22 hours before admission. A swelling formed in the perinæum and retention occurred, which was relieved by a catheter through which bloody urine passed : this was retained for 10 hours and then the perinæum was laid open in the middle line. The urethra was found to be much torn. The perinæal wound gradually contracted and finally healed. A full sized catheter was passed every third day. He remained in hospital 59 days. No constitutional disturbance.

e. Hindu male æt 35. Had gonorrhœa 5 years ago ; fresh attack two months ago, succeeded by pain and difficulty in micturition. While straining to make water on the day of admission felt something give way and perinæum and buttocks swelled. Presented symptoms of shock. Free incision made in middle line of perinæum and into left ischio-rectal fossa ; pus and sloughs issued freely from both incisions. Wound cleaned in a week. Urine passed both ways—through penis and wound for 20 days, then through penis only. Left hospital in 46 days quite cured ; a full sized catheter was passed every third day to secure patency of urethra.

f. Hindu male æt. 45. Gonorrhœa 12 years ago ; perinæal abscess 5 months ago, succeeded by fistula. Had 3 fistulous openings in perinæum through which urine issued. Tight stricture in the region of the bulb. Catheters 1 to 4 passed on day of admission ; Nos. 3 to 6 in 6 days, and Nos. 5 to 8 in 6 days more. This operation was followed by much bleeding. The bladder became greatly distended with clots. The perinæum was laid open freely in the middle line and No. 8 catheter introduced into the bladder through the wound ; bleeding continued and patient died 10 hours after the operation of exhaustion.

g. Eurasian male æt. 24. Fell on a fence which he

was trying to jump and ruptured his urethra. Passed blood per urethram. Perinæum tense and swollen, laid open freely in the middle line ; a large cavity containing fluid and clotted blood found. No. 10 catheter passed into the bladder : urethra badly torn. Arterial bleeding continued and a catgut ligature was passed round the internal pudic with a needle ; wound plugged with lint steeped in Tinct. Fer. sesquichlor. on account of oozing. The wound granulated and closed slowly. Patient was discharged quite cured in 54 days. A full sized catheter was passed occasionally.

: *h.* Eurasian male æt. 40. History of chancre and gonorrhœa and perinæal abscess of 5 days' duration. Free opening made in middle line of perinæum ; wound healed in 23 days. Full size catheter passed every 2 or 3 days.

6. *Incisions for hydrocele.* *a.*—Hindu male æt 45. Large double hydrocele of 7 years' duration. An opening was made into each with antiseptic precautions and a drainage tube inserted. That on right side was removed after 6 days, but was reinserted in 22 days owing to re-accumulation of fluid in the tunica. It was finally removed in 21 days, the cavity closing up as it was gradually shortened. The tube on the left side was retained for a month, being gradually shortened as the cavity became shallow. On both sides a radical cure was obtained. Remained in hospital 63 days.

b.—Hindu male æt. 40. Large hydrocele of left side, of 6 years' duration ; became inflamed 6 days before admission in consequence of injury ; turbid serum issued through canula. An opening was made into the tunica under antiseptic precautions and a tube inserted. The scrotal swelling subsided at once. The tube was withdrawn in 5 days, the wound having apparently filled up with lymph. Two days afterwards shivering and fever took place, and fluctuation was again noticed. The tunica was laid open freely and dressed with plugs of

boracic gauze. The opening healed by granulation and a satisfactory cure was obtained in 35 days.

c. East Indian male æt. 38. Hydrocele of left side, of one year's duration, which became inflamed a week before admission. Turbid serum removed by tapping. In a fortnight re-accumulation took place and the tunica was laid open and its cavity dressed with boracic gauze invaginated into it and plugged with carbolic gauze. It healed by granulation. A hydrocele of the right tunica was subsequently tapped and injected with iodine. Remained in hospital 66 days.

7. *Incision for hæmatocele.* a.—Mahomedan male æt 50. Hæmatocele of one month's duration, consequent on unskilful tapping of a hydrocele. Incised and drainage tube inserted in the first instance. This measure failing to empty it, in three days, it was laid freely open, contents thoroughly removed and the cavity dressed with boracic gauze invaginated and stuffed with carbolic gauze. Healed by granulation in 38 days.

b.—Hindu male æt. 22. Putrid hæmatocele of right side ; laid open freely ; washed with carbolic lotion and dressed the same as last case ; tunica about $\frac{1}{4}$ th in. thick ; contained putrid grumous material. Discharge became sweet under assiduous use of antiseptics and cavity was obliterated. Wound healed in 46 days.

8. *Large Abscesses.*

a. *Iliac abscesses.* (a)—Hindu male æt. 22. Left side ; 20 days' duration ; high fever. Opened antiseptically below Poupart's ligament ; $1\frac{1}{2}$ pint of pus gushed out ; fever subsided in 24 hours. Two drainage tubes inserted—one being withdrawn in 2 days and the other gradually shortened and finally removed in 25 days. Discharged in 55 days quite recovered.

(b.)—Hindu female æt. 40 ; right side, 2 months' duration ; opened antiseptically below Poupart's liga-

ment, about half a pint of pus removed ; a drainage tube inserted, shortened in 6 days and withdrawn in 12. Discharged in 61 days quite well.

(c.)—Mahomedan male æt. 30 ; right side, 2 months' duration. Opened antiseptically below Poupart's ligament by Hilton's method ; about $1\frac{1}{2}$ pint of pus gushed out ; 2 tubes inserted,—one removed next day, the other in 11 days. Left hospital in 38 days.

(d.)—Hindu male æt. 16 ; left side, one month's duration. Opened antiseptically below Poupart's ligament ; serum and lymph issued ; no pus ; drainage tube inserted. Discharge continued serous and aseptic ; tube removed in 7 days ; wound healed and swelling disappeared. Discharged in 3 days.

[This case presented all the symptoms of an abscess—tense, tender swelling in iliac fossa, fluctuation, permanent flexion of hip joint, &c. The swelling was undoubtedly inflammatory but had not undergone suppuration.]

(e.)—East Indian female æt. 55 ; left side ; 12 days' duration. Opened below Poupart's ligament ; tube removed in 6 days. Discharged in 41 days.

(f.)—European male æt. 40 ; right side ; 26 days' duration. Two drainage tubes inserted,—one removed in 2 days and the other in 13 days. Discharged in 29 days.

(g.)—European male æt. 15 ; left side ; 15 days' duration. Opened antiseptically below Poupart's ligament ; tube removed in 8 days. Wound healed in 19 days.

(h.)—Hindu female æt. 30. Large sinus of 2 years' duration in left gluteal region, abscess in right iliac fossa. Caries of lumbar vertebræ ; history of syphilis and salivation. Abscess opened above Poupart's ligament ; putrid pus issued ; drainage tubes inserted in sinuses and abscess. Discharge continued profuse and putrid and patient sank from exhaustion 12 days after the opening of the abscess.

[This was a case of psoas rather than iliac abscess.

Pus had found its way through the greater sacro-sciatic foramen into the left gluteal region. The putrid condition of the abscess on the right side was evidently due to communication with the putrid sinuses on the left side.]

(i.)—East Indian male æt. 13. Right side ; 2 months' duration; opened antiseptically below Poupart's ligament; and 3 drainage tubes inserted,—one tube removed in one day, the second in 3 days, and the third in 10 days. Discharged in 61 days.

[The result in all these cases except (h), which was a case of putrid caries of the lumbar vertebræ giving rise to double psoas abscess, was eminently satisfactory. On incision both local and constitutional distress rapidly subsided; no sinus resulted in any of the cases, the abscess cavity filled up in from 10 to 15 days and the remainder of the stay in hospital was occupied by repair of the skin wound and absorption of the effusion.]

b. *Psoas abscess*.—Hindu male æt. 30. Spinal curvature with fluctuating swellings in lumbar and iliac regions; abscess cavity reached by incision under antiseptic precautions beneath Poupart's ligament. 2 drainage tubes inserted,—one withdrawn in 2 days and the other gradually shortened. Discharge became scanty and serous. Patient left the hospital contrary to advice in 144 days, greatly improved in general health and able to walk without discomfort. A small sinus exuding a slight serous discharge still existed in the groin.

c. *Pelvic abscess*.—Hindu female æt. 45. Symptoms of one month's duration; fluctuating swelling detected in recto-vaginal septum. It was punctured per vaginam and about a pint of matter withdrawn; canula retained for 24 hours; matter continued to pass per vaginam for a week. The swelling gradually subsided and she was discharged well in 20 days.

(d.) *Scrotal Abscesses*. (a.)—Hindu male æt. 55; right side; 7 days' duration, accompanied with high fever, great

infiltration of scrotum and cord ; obscure fluctuation posteriorly ; laid open antiseptically and drainage tube inserted. Recovered in 18 days.

(b).—Hindu male æt. 25. Right side ; 8 days' duration ; hydrocele on same side ; abscess opened antiseptically and hydrocele tapped. Recovered in 30 days.

(c).—Hindu male æt. 37. Erysipelatous inflammation of scrotum cord and abdominal wall ; of 12 days' duration, accompanied with high fever and marked prostration. As soon as evidence of the existence of pus was obtained a free opening was made in the scrotum and above Poupart's ligament antiseptically and drainage tubes inserted. The infiltration slowly subsided and apertures took a long time to heal. Discharged in 40 days.

(d).—Chinaman æt. 43. Abscess of left tunica vaginalis, of 15 days' duration. Opened antiseptically and drainage tube inserted. Recovered in 24 days.

(e).—Mahomedan male æt. 45. Abscess of right tunica vaginalis, of 22 days' duration, treated by free incision and drainage under antiseptic precautions. Recovered in 26 days.

[Cases (a) and (c) illustrate a condition which is not uncommon during and after the rains. A patient has, perhaps after malaise, a severe rigor followed by fever, during whose development rapid infiltration of the cord and scrotum of one or both sides occurs. The tunica is apt at the same time to undergo rapid distension. The infiltration may implicate the abdominal wall or extend between or beneath the abdominal muscles in the areolar planes. In rare cases peritonitis may occur. The fever pursues a remittent course, and is apt to be very high in range and prostrating in effect ; cases of this sort often prove fatal by blood poisoning in a few days. The swelling may resolve on subsidence of the fever in a week or 10 days, more frequently suppuration of a diffuse kind results, the pus being of

an ichorous or sanious kind and peculiarly prone to putrefy. Antiseptic precautions, free opening and efficient drainage are peculiarly valuable in this class of cases. Cases (*d*) and (*e*) were inflamed hydroceles treated by free evacuation and drainage.]

e. Abscess of abdominal wall.—Hindu female æt. 60. Abscess of right iliac region following injury of 15 days' duration. Had opened spontaneously; cavity full of blood clot; aperture enlarged, thrombi removed and drainage tubes inserted. Healed in 23 days.

f. Gluteal abscesses. (*a*)—Hindu male æt. 32. Right side; 25 days' duration; whole extremity cedematous. Opened antiseptically behind trochanter, 32 oz. of pus escaped. 3 drainage tubes inserted in different directions. The swelling of the leg subsided and repair was in satisfactory progress when on the 16th day the wound became unhealthy, some constitutional disturbance occurred and the leg swelled again. The knee joint also filled with fluid. Bagging of matter occurred on the front of the thigh requiring free counter-opening. The swelling of the limb and joint now disappeared and complete recovery took place after a stay in hospital of 61 days.

(*b*.)—Hindu male æt. 25. Right side; 3 days' duration. Opened antiseptically, 22 oz. of pus escaped; 2 tubes inserted,—one withdrawn in 2 and the other in 7 days. Discharged in 19 days.

(*c*.)—Hindu male æt. 12. Left side, followed an injury sustained a week ago. Opened antiseptically, 8 oz. of pus; drainage tube inserted, withdrawn in 8 days. Another abscess formed in front of the thigh from which 4 oz. of pus were let out. It healed rapidly. Discharged in 44 days.

(*d*.)—Hindu male 1½ year old. Sustained a fall two months ago. An abscess formed in the buttock and thigh of right side. Latter opened 5 days before admission without antiseptic precautions. A long putrid sinus

resulted. Gluteal abscess opened antiseptically ; tubes inserted both in sinus and abscess. Was doing well till the 7th day when œdematous swelling of the limb occurred with fever and aphthous ulceration of lips, tongue and mouth. Diarrhœa followed and the child died 18 days after operation.

g. Abscess of arm.—European male æt. 21. Abscess of right arm of 3 weeks' duration following bruise. Opened antiseptically and tube inserted ; tube withdrawn on 2nd day. Abscess healed in 5 days.

h. Abscess of thigh. (a).—Native Christian female æt 30. Deep seated abscess of front of right thigh, of 17 days' duration. Skin divided by scalpel and abscess reached through vastus by director ; 2 tubes inserted,—one removed in 3 days and the other in 11. Left hospital in 34 days.

(b).—Hindu male æt. 24. Deep seated abscess of front of left thigh opened by scalpel and finger ; 2 tubes inserted,—one removed in 13 and the other in 15 days. Discharged in 28 days.

(c).—Hindu male æt. 35. Erysipelatous swelling of left thigh, of 10 days' duration. Pus being detected deeply by a fine trochar, a free opening was made through which some sanious matter issued ; 2 tubes inserted. The erysipelas became more intense and symptoms of prostration occurred on 5th day, on the evening of which patient died.

(d).—Hindu male æt. 30. Abscess of right thigh following lymphangitis ; opened antiseptically ; catgut drain inserted. Healed in 8 days. Discharged in 11 days.

(e).—Eurasian male æt. 19. Left thigh ; 3 days' duration ; diffuse ; opened antiseptically ; 2 drainage tubes inserted,—one withdrawn in 5 and the other in 13 days. Discharged in 30 days.

(f).—East Indian female æt. 14. Left side, five days' duration ; opened antiseptically. Healed in 39 days.

(g.)—Jewess æt. 29. Right side; 14 days' duration following lymphangitis; opened antiseptically; tube withdrawn in 9 days. Discharged in 16 days.

(h.)—East Indian male æt. 7. Left side; one week's duration; situated in popliteal space; leg much swollen; opened antiseptically; cavity healed slowly; knee joint somewhat contracted and had to be straightened by a MacIntyre splint; remained in hospital 103 days.

(i.)—Hindu male æt. 40. Left thigh; one month's duration; very large and deep; opened antiseptically through vastus externus; 2 tubes inserted,—one removed in 5 days the other in 21 days. Discharged in 72 days.

(j.)—East Indian male æt. 45. Front of right thigh; one month's duration; consequent on injury. One tube inserted, bagging took place and a counter opening and second tube became necessary. Discharged in 36 days.

(k.)—European male æt 30. Right thigh; history of lead poisoning; wrist drop; opened antiseptically and tube inserted; removed in 3 days. Discharged in 15 days.

[In several of these cases the matter formed in the loose cellular tissue surrounding the periosteum of the femur anteriorly and externally, and access could only be obtained to it through the vastus externus; the fibres of the muscle were separated by finger or director after the skin and fascia lata had been opened by knife.]

i. *Abscess of leg*.—Hindu male æt 34; right leg; 12 days' duration; whole leg swollen; opened on inner side antiseptically; tube inserted; removed in 15 days. Discharged in 29 days.

j. *Abscess of liver*. (a)—Hindu cook æt. 26. Hepatic symptoms of 3 months' duration; admitted with fluctuating swelling in epigastrium; left lobe of liver enlarged. Opening made antiseptically and about one pint of hepatic pus let out. Two drainage tubes inserted. Discharge

at first profuse and grumous, gradually became scanty and more tenacious and lymph. Remained sweet for a fortnight and then became putrid ; vomiting, pain in the chest and prostration gradually supervened and he died of collapse in 30 days. The abscess was found to have eroded the left lobe of the liver deeply, and to have worked its way into the pericardium and stomach.

(b.) Hindu male æt 25. Symptoms of one month's duration. Admitted with a fluctuating swelling in epigastrium, to right of middle line ; opened antiseptically ; discharge at first purulent and then like prune juice ; tube removed and cavity closed in 9 days. Symptoms of dysentery supervened and patient died of this disease 13 days after the opening of the abscess.

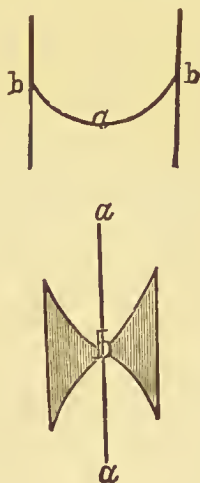
k. *Multiple abscess.* (a.)—Hindu male æt. 45. Had 5 abscesses in different parts of the body said to have succeeded a fall sustained two months ago. They were opened antiseptically as they matured. Discharged well in 33 days.

(b.)—European male æt. 10. Four large abscesses in different parts of the body. Patient in bad health, anæmic and emaciated. They were opened antiseptically and healed kindly. Discharged in 18 days.

[In all unbroken abscesses strict antiseptic precautions were adopted with very satisfactory result ; the cavity filled up with lymph as the tube was withdrawn. This generally occurred in from 7 to 14 days according to the size and depth of the abscess. The balance of the period of detention was required for repair of the skin wound. Bagging, counter openings and sinuses were a rare exception. Constitutional disorder disappeared as a rule on the opening being made. In two of the fatal cases openings leading to putrid sinuses existed on admission. In a third death was due to blood poisoning consequent on cellular erysipelas. In one of the perihepatic abscesses putrefaction was apparently the cause

of fatal extension and ulceration into pericardium and stomach. In the other liver case the abscess did well, but a very intractable attack of dysentery carried the patient off.]

VIII. 1. *Operation for Cicatrix after burns.*—Hindu female æt. 2 months, was burnt three hours after birth in the left arm and hand. Elbow and wrist joint forcibly flexed and fixed by cicatricial bands. These were divided transversely and the wounds thus made were stitched longitudinally. Flaps being formed by small cuts at the end of the transverse incision thus :



The deformity was rectified in this manner. The operation was performed antiseptically and boracic dressings and a splint applied. On the 2nd day there was a rise of temperature ; the flaps showed indication of sloughing. On the third day there was high fever with tympanitis and vomiting, and death took place from exhaustion.

2. *Staphyloraphy.*—Eurasian male æt. 19. Congenital fission of soft palate in middle line. Pillars of fauces divided by scissors ; deep incision made on each side of

cleft to paralyse tensor palati; edges pared and brought together by horse-hair sutures. Stitches removed in 6, 7 and 11 days: result satisfactory. Remained 20 days in hospital.

3. *Harelip*.—Both cases were single without any palatal or dental complication; edges pared and brought together by horsehair; result satisfactory.

4. *Tongue tie*.—Hindu male æt. 26. Congenital; tongue atrophied; articulation very defective; frænum divided by seissors and finger; movements of tongue rendered freer. Mastication facilitated; breech not improved.

5. *Circumcision*. *a*.—East Indian æt. 14. Chancroid sores round preputial orifice; phimosis. Prepuce removed, ulcers revealed on glans, they were touched with nitric acid. Stitches draged; wound healed by granulation. Discharged in 34 days.

b.—Eurasian æt. 20. A similar condition similarly treated; healed by granulation in 30 days. Satisfactory result.

c.—Eurasian æt. 9. Congenital phimosis; collection of smegma in preputial cavity; balanitis and œdematous prepuce. Operation as in previous cases. Wound healed by granulation in 19 days.

d.—Eurasian æt. 18. Condition similar to cases *a* and *b*; similarly treated. Healed in 24 days.

e.—Similar condition treated in the same way; healed satisfactorily in 31 days.

[The mode of operating adopted in these cases was:—an oblique section of the prepuce and subsequent vertical section of its mucous membrane on each side of the glans, the edges of the latter being stitched to the skin edges by horse-hair sutures all round. The inflammatory infiltration of tissue caused these to drag in every instance. The result was, however, good in all the cases. A sufficient amount of prepuce remaining to cover the corona and part of the glans surface.]

IX. 1. Of the 7 *hydroceles tapped and injected* 5 were filled with 2 drachms of tincture of Iodine diluted with an equal amount of water, and 2 with pure tincture. One operation sufficed for radical cure in each case.

2. *Nerve-stretching*.—Hindu æt. 32; admitted with gangrene of 2nd, 3rd and 4th toes of right foot following tingling and numbness 40 days before; whole foot much swollen. Sciatic nerve stretched below lower border of gluteus maximus. Wound healed under antiseptic treatment in 2 days; swelling subsided quickly after the stretching; line of demarkation formed and dead parts were gradually separated, the wound closing up by granulation leaving a serviceable foot. Remained in hospital 70 days.

GENERAL REMARKS.

1. *Death-rate*.—The general death-rate, 15·2 per cent, takes an intermediate position between that of 1879, 18·5 and of 1880, 10·7. The rates are true and fairly comparable, because the cases were treated to the end, and no case was removed from hospital in a dying state. The operations performed were also very much the same in number and kind.

2. *Death causes*.—These have been briefly indicated at page 113. In so far as they are capable of grouping the following statement represents them summarily :—

Shock	...	...	...	...	5
Tetanus	...	...	...	...	4
Bowel complaints	...	...	...	...	3
Exhaustion	...	...	...	...	3
Septic disease...	...	...	...	...	7
Miscellaneous...	...	...	...	...	4
					<hr/>
					... 26

The term shock is restricted to primary shock, caused by severe injury generally combined with some pre-existing debilitating cause. Exhaustion expresses a

later surrender of life due to nervous depression dependent on the effects of injury and disease separately or combined. The other terms used explain themselves.

3. *Antiseptics and hospitalism.*—The antiseptic system has been practised as strictly and sedulously as possible during the year. Difficulties are encountered in an Indian hospital which tend to detract from the success of antiseptic surgery. The appliances are not so perfect as in an English hospital; the patients very rarely give intelligent assistance, and often defeat the surgeon's best efforts by incautious movements, pulling off and soiling dressings, &c., and the assistants are often unreliable—careless, hurried, superficial or dishonest.

Still by persevering personal attention success can be secured in most instances, and there is nothing in the climate to render such success unattainable or even arduous, if only the system is thoroughly understood and conscientiously applied. The end in view, repair of injury by physiological process without the intervention of pathological or septic disturbance, can be attained in suitable cases just as well in India as in Europe, though perhaps for the reasons stated not so easily. It may be useful to examine the death causes above specified in detail with a view to discover how far they are due to the absence or failure of antiseptics. As regards the general behaviour of wounds the experience of the year was favourable. No erysipelas, sloughing cellulitis or similar wound disturbance prevailed.

In none of the cases of shock could septic poisoning be said to predispose or hasten the fatal event. In two cases the severity of the operation was solely responsible; in one impaired health from long standing sinuses, in one previous hæmorrhage, and in another strangulation of a hernia were undoubtedly predisposing causes.

Of the 4 cases of tetanus, the disease arose in three

patients whose wounds were quite aseptic, and in one whose wound was putrid.

Of the bowel complaints, diarrhœa in one case appeared to be caused by imperfect reaction after a severe operation ; in another case was associated with a large putrid sinus, and dysentery in a third case occurred in a patient with liver abscess which had undergone aseptic repair.

In one of the cases exhaustion was due to paralysis and viseral sarcoma, in another to long continued hæmorrhoidal bleeding, and in a third to putrid psoas abscess, admitted in that state.

Of the 7 deaths from septic disease—all were associated with putrid wounds ; and in 6 instances this condition succeeded operation. In one case, herniotomy, in which the bowel had become gangrenous, putrefaction was inevitable ; in another case it was for erysipelatous inflammation existing on admission that the knife was resorted to. These leave a balance of 4 deaths regarding which the question arises, whether, if putrefaction had not invaded the wounds, death would have occurred. I am inclined to think it would not. In none of the miscellaneous cases did putrefaction or septic absorption have anything to do with the result. On the whole the experience of the year is strongly in favour of strict antiseptic surgery and in support of the view that septic complications may be largely if not entirely prevented by the sedulous employment of antiseptic agents.

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PRECIS OF OPERATIONS PERFORMED
IN THE WARDS OF THE FIRST SUR-
GEON, MEDICAL COLLEGE HOSPITAL,
DURING THE YEAR 1882.

BY SURGEON-MAJOR K. MCLEOD,

A. M., M. D., F. R. C. S. E.,

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The table and notes which follow are in series with those published for 1879, 1880 and 1881 (vide *Indian Medical Gazette*, Vol. XV., pp. 92, 123 ; Vol. XVI., pp. 123, 145, and Vol. XVII., pp. 113 and 143.) The detailed histories from which the abstracts have been prepared were drawn up by Assistant-Surgeon DEVENDRA NATH DAY, M. B., for whose efficient aid I have much pleasure in again recording my deep obligations.

Description of Operations.	Number of oper- ations.	Died.
<i>I. Operations on the Eye and its appen- dages.</i>		
I. Excision of the eyelids for epithe- lioma 	I	O
<i>II. Operations on Arteries.</i>		
I. Ligature of— <i>a.</i> brachial artery for wound 	I	O
<i>b.</i> radial ...	I	O
Total ...	2	O

Description of Operations.	Number of operations.	Died.
<i>III. Operations on Joints.</i>		
1. Dislocation of hip joint reduced ...	3	0
2. Extension of stiff knee joints ...	4	1 ¹
3. Incision of knee joint ...	2	0
4. Excision of joints— <i>a.</i> elbow ...	2	0
<i>b.</i> hip ...	1	0
Total ...	12	1
<i>IV. Operations on Bones.</i>		
1. Wire-suturing of fractured patella	2	0
2. Gouging out of carious os calcis...	1	0
Total ...	3	0
<i>V. Amputations.</i>		
<i>A.—For Injury.</i>		
1. Primary of four outer fingers ...	1	0
2. Secondary of thigh (Carden's) ...	2	1 ²
3. Secondary of foot (Syme's) ...	2	0
4. Secondary of arm ...	1	0
<i>B.—For Disease.</i>		
6. For syphilitic caries—of leg ...	1	0
Total ...	7	1
<i>VI. Removal of Tumours by excision.</i>		
<i>A.—Malignant.</i>		
1. Scirrhus of mamma ...	1	0
2. Epithelioma— <i>a.</i> of lip ...	1	0
<i>b.</i> of larynx ...	1	0
<i>B.—Non-malignant.</i>		
3. Cystic of scalp ...	1	0
4. Molluscum of face ...	1	0
5. Cartilaginous of neck...	3	1 ³
4. Fibroma of thigh ...	1	0
5. Elephantiasis— <i>a.</i> of scrotum ...	28	4 ⁴
<i>b.</i> of labium ...	3	1 ⁵
6. Hæmorrhoids, external and internal ...	3	0
Total ...	43	6

Description of Operations.			Number of oper- ations.	Died.
<i>VII. Removal of Calculi.</i>				
1. Vesical, for—by lithotomy	...	...	4	0
2. „ „ lithotritry	...	...	1	0
Total	...	...	5	0
<i>VIII. Removal of foreign bodies.</i>				
1. From nasal cavity	...	...	1	0
2. From urethra	...	...	1	0
Total	...	...	2	0
<i>IX. Incisions.</i>				
1. Tracheotomy	...	...	1	0
2. Herniotomy	...	...	5	2 ⁶
3. For radical cure of hernia	...	...	13	1 ⁷
4. For fistula in ano	...	...	3	0
5. Perinæal section	...	...	4	0
6. For hæmatocele	...	...	3	0
7. For recto-vaginal fistula	...	...	1	1p
8. For large abscesses	...	...	12	0
Total	...	...	42	4
<i>X. Reparative Operations.</i>				
1. For cicatrix after burn	...	...	1	0
2. For hare-lip	...	...	2	0
3. For atresia oris	...	...	2	0
4. For restoration of lip	...	...	2	0
5. For phimosis—circumcision	...	...	6	0
6. For laceration of scrotum	...	...	1	0
Total	...	...	14	0
<i>XI. Operations not classed.</i>				
1. Nerve-stretching.	...	...	1	0
Total	...	...	132	12

Causes of death.—1—2 Shock. 3 Secondary hæmorrhage. 4 *a* Diarrhœa and pneumonia. *b, c* Tetanus. *d* Septicæmia and parotitis. 5 Septicæmia and pneumonia. 6 *a.* Obstruction, Peritonitis. *b* Gangrene of bowel. 7 Gangrene. 8 Phthisis.

The following abstracts of cases are arranged in accordance with the foregoing return :—

I. 1.—Excision of the eyelids for epithelioma.—Mahomedan male, æt. 35, disease of eight months' duration ; commenced in the lower lid ; implicated the side of the nose and the left cheek ; fungating ; has attained the size of an apple ; left eyeball displaced but healthy ; tumour slightly movable. Another hard lump in front of left ear, and another inside of left angle of lower jaw. Ablation of orbital tumour attempted. It was found to involve the inner and upper wall of the orbit ; extirpation impossible. No attempt made to remove the two other tumours. Cornea sloughed and eyeball collapsed. Cavity caused by removal of tumour was filled up by granulation material. Disease recurred. Patient left hospital of his own accord 40 days after operation. No head symptoms.

II. 1. Ligature of brachial artery for wound.—Hindu male, æt. 35 ; severe wound of lower third of right arm caused by breaking of a bottle ; brachial artery, median nerve, median basilic vein, and part of biceps severed ; lost much blood. Wound enlarged, and both ends of brachial artery tied, two other vessels ligatured. Catgut drain inserted, wound stitched and dressed antiseptically. Suppuration took place and some sloughing ; but on separation of sloughs, healing by granulation ensued satisfactorily. Sensation of parts supplied by median nerve lost. Could hold a pen and write. Remained 77 days in hospital.

2. Ligature of radial artery for wound.—Mahomedan male, æt. 30 ; wound of lower third of forearm caused by an axe ; much bleeding ; wound enlarged, both ends of artery tied ; wound stitched and dressed antiseptically. Healed by first intention. Patient left hospital in 4 days.

III. 1. Dislocation of hip joint. a.—Hindu male, æt. 10 ; left side ; dorsal, of 7 days' duration,

caused by a fall. Reduced by manipulation under chloroform. Patient left hospital same day.

b. Hindu male, æt. 35; left side; dorsal, one day's duration; caused by fall of a bale of jute on the back. Reduced by manipulation under chloroform; left hospital in 9 days.

c. Hindu male, æt. 30; left side; dorsal; of one day's duration, caused by fall of a bale of jute on the back. Reduced by manipulation under chloroform. Left hospital in 15 days.

[Both these accidents were caused by the same bale of jute. The reduction was effected by Dr. R. D. Murray, Resident Surgeon.]

2. *Extension of stiff knee joint. a.*—Hindu male, æt. 37; left knee joint; four months' standing; followed gonorrhœal arthritis; bent at a right angle. Straightened forcibly under chloroform and put on a MacIntyre splint; left hospital in 85 days with a straight but stiff joint.

b. Hindu male, æt. 45; both knee joints affected; disease (syphilitic arthritis) of 8 months' duration; joints swollen and permanently flexed at an acute angle; both forcibly stretched under chloroform—right easily; popliteal skin gave way when left was nearly straightened. Wound dressed antiseptically and both limbs placed on MacIntyre splints. Patient detained in hospital 179 days. Left with straight but stiff limbs; able to stand firmly and walk a little.

c. East Indian male, æt. 25; left side; from gonorrhœal inflammation of 7 months' duration; joint firmly flexed and patella fixed, forcibly extended under chloroform and put on a MacIntyre splint. Remained 89 days in hospital. Left with a straight limb; knee joint admitted of some movement.

d. Hindu male, æt. 18. History of gonorrhœa, measles, fever, stricture, and urethral fever. Both knees have gradually become stiffened and bent from being habitually retained in that position. His

joints also flexed and stiff. Has large cicatrices of deep bed-sores on buttocks and heels. Is in very feeble health. Three days after admission the right knee was forcibly stretched under chloroform, and put upon a MacIntyre splint. Pulley and weight adapted to leg to maintain extension. This was followed by fever for two days. Got retention of urine which was relieved by catheter ; urethra found to be strictured and fully dilated. Nine days after admission (6 after the first operation), his health having apparently been restored, the left knee was similarly dealt with. This was followed by shock which proved fatal in 10 hours. On *post-mortem* examination, both knee joints were found to contain some blood mixed with synovia. Ecchymosis existed around the joint. The popliteal vessels were uninjured. The cavities of the heart, which was flabby and dilated, were full of decolorized clot. The membranes of the brain were in a state of chronic thickening and congestion with effusion into the ventricles ; liver congested, spleen enlarged, kidneys undergoing contraction.

[The extension of stiff joints in cases of fibrous ankylosis is a very safe and successful procedure. The stiffness may depend on a great variety of circumstances, and varies exceedingly in degree, and the treatment must be adapted accordingly.

The cause may be outside of the joint or inside. If outside, it may depend (*a*) upon rigidly contracted muscles and prolonged recumbency, or (*b*) upon the result of inflammatory thickening of the fibrous textures surrounding the joint—the remains of a severe synovitis which has undergone resolution as far as the cavity of the joint is concerned ; prolonged retention in a faulty position generally adding to the mischief, or (*c*) upon cicatrices the result of wound, or ulcer, or abscess. If within the joint, there are (*d*) fibrous adhesions between opposed cartilaginous or synovial surfaces, the cartilage or

synovial membrane having undergone destruction. This condition may result from penetrating injury or inflammation, generally of a strumous kind, and is often the sequel of an open joint. In this case there is also generally thickening and contraction outside the joint as well. In case (*a*) stretching can generally be accomplished at once and to the full and without tearing. It is advisable to put the limb on a splint for a few days and then resort to regular passive movement. There is seldom, if ever, any irritation resulting from stretching in such cases. In case (*b*) the completeness of stretching will depend on the strength of the adhesions and the state of the skin. In some cases the joint can be fully stretched at once, in others the cure must be completed by the use of splints, weights, or elastic bandages. In all these cases there is tearing at the time, and more or less irritation for a few days after the operation. A second or third attempt may be made under chloroform and passive motion should be resorted to after rest. The treatment in case (*c*) will depend on the nature of the case, the position and extent of the cicatrix, &c. In case (*d*) more caution and time are required. They are amenable to mechanical extension, and some degree of movement can generally be restored. A more decided sensation of tearing is perceptible in these cases, and very often, especially in the case of the knee, a certain amount of dislocation results. Irritation of the joint is more pronounced in these cases, often requiring ice or lead. Perseverance in treatment however produces decided benefit, and even if movement is not restored, the joint can be placed in a more favourable position.

In the case of joints which are the seat of actual disease, whether of an acute, sub-acute, or chronic kind, forcible stretching is to be avoided. The foregoing series presents two remarkable cases—one in which the popliteal skin gave way under excessive traction; antiseptic treatment was promptly adopted, and

the case eventually did well. The other was a fatal case, death having been caused in a feeble unhealthy subject by shock resulting from forcible stretching of the knee joint, the other joint having been similarly treated a few days previously with the result of producing a smart attack of fever. Both joints were found to contain bloody synovium, and ecchymoses were observed outside of them ; but no evidence of inflammation existed on either side.]

3. *Incision of knee joint. (a).*—Hindu male, æt. 28, left knee ; acute synovitis following chicken pox ; the joint was enormously swollen, and on tapping it sero-purulent material issued in large quantity and the cavity collapsed. It re-accumulated in a few days, and a free incision was made under antiseptic precautions into the supra-patellar pouch. A drainage tube was inserted and an antiseptic dressing applied. No further accumulation occurred, and the symptoms, local and constitutional, promptly subsided ; the tube was gradually shortened and finally removed in 18 days. He was discharged in 89 days with a useful joint.

b. Hindu male, æt. 25, sustained a compound fracture of the left leg, about 24 hours before admission, by a fall on some bricks from a height of about 10 feet. The fracture was oblique and knee joint much swollen. The wound was dressed antiseptically, but putrefaction supervened. He had great constitutional disturbance. Seven days after admission the knee joint was tapped with a fine trochar and a quantity of sanguineous serum let out. Re-accumulation taking place in three days, it was freely incised above the patella and a drainage tube inserted : this gave great relief. Discharge from the wound remained sweet, and the tube was gradually withdrawn and wound allowed to close. Extensive suppurative cellulitis occurred up and down the limb requiring numerous counter-openings. Several pieces of necrosed bone had to be removed, but the

wound eventually closed, and firm union took place, and the function of the limb was restored. He remained 298 days in hospital.

4. *Excision of the elbow joint. (a).*—Hindu male, æt. 37, sustained a severe compound comminuted fracture of left elbow by a fall off a tree; long lacerated wound at back of joint, through which the joint was entered and numerous fragments of the bones entering into its formation felt; arteries and nerves intact. Resection was performed in the usual way, and about 2 inches of humerus and $1\frac{1}{2}$ of radius and ulna removed. Ten separate pieces of bone were taken out of the cavity. Notwithstanding rigid antiseptic precautions, the wound putrefied on the third day and suppurated on the fifth. There was very little constitutional disturbance, the cavity gradually filled by granulation, and the patient left the hospital in 44 days with a strong and useful arm, the joint permitting of a wide range of movement.

b. Hindu male, æt. 20, was bitten by a tiger in the right elbow 7 months before admission. General inflammation of the limb ensued, and he came with a stiff elbow riddled with sinuses leading to bare bone and fingers incapable of motion owing to the results of thecal inflammation. The nails of this hand had fissures across them indicating entire interruption to growth for a short period. Five days after admission the elbow joint was resected by single vertical dorsal incision. Boro-glyceride lotion (1 in 20 parts) was used as a lotion and dressing, but it failed to keep the wound aseptic. Suppuration took place, but eventually satisfactory repair was procured, and by means of passive movement of the elbow, wrist, and fingers, a considerable range of movement was restored. He remained in hospital 75 days.

b. *Excision of the hip joint.*—Mahomedan male, æt. 16, sustained an injury of the left hip about a year before admission, followed by fever, inflam-

mation, and abscesses which were opened and gave rise to three sinuses. Dorsal dislocation of femur; hip rigidly flexed; limb shortened and wasted, somewhat inverted; shaft of femur thickened: curved incision made behind trochanter major. Necrosed head of femur removed, and seven or eight pieces of dead bone taken out. Limb placed in straight position and secured by long splint and weight; recovery slow. Two sinuses, on the anterior and inner aspect of the thigh, continued long to discharge. Was eventually able to walk with the aid of crutches, and left hospital after a stay of 312 days, in good health and every prospect of regaining the use of the left leg; the new hip joint admitted of a considerable range of movement.

IV. 1. Wire suturing of fractured patella. a.—European male, æt 50, sustained transverse fracture of right patella, and was treated for 14 days by hyper-extension and strapping. The fragments could not be maintained in contact; they were exposed by two vertical parallel incisions about an inch apart, drilled with a bradawl, and brought close together by means of a double twisted silver wire, a large quantity of clot having been cleared out with the finger from between them. The wounds were stitched with iron wire and horse-hair. The operation was performed under strict antiseptic precautions. The wound remained aseptic throughout and pursued an aseptic course. The wires were untwisted and removed 40 days after the operation. There was a slight rise of temperature for two days, and some tenderness of the wound, but no inflammation or suppuration occurred.

The bone united firmly, and patient left hospital in 102 days, with a useful joint and limb. He subsequently fell down some steps and refractured the bone at the same site. The fracture on this occasion was compound owing to the tearing open of the wound. He was treated at the General Hospital.

The wound closed and the bone united, with the exception, that a small fragment at the upper and outer aspect of it, remained detached from the rest of the mass. He has been seen walking about recently (March 1883) without difficulty or halt.

b. Hindu male, æt. 40, sustained transverse fracture of the right patella by a fall on the knee while in a bent position. The joint was much swollen, and the fragments remained $1\frac{1}{2}$ inches apart, and could not be brought closer. A single vertical incision was made, large clots cleared out of the joint and the cavity of the fracture. The fragments were then drilled and approximated by twisted silver sutures. The operation was performed under strict antiseptic precautions, but symptoms of carbolic poisoning set in ; the carbolic dressings were exchanged for boracic ; putrefaction invaded the wound and joint which suppurated. Drainage tubes were inserted ; the wires were withdrawn after 49 and 58 days ; the wound eventually closed, the bone united, and patient left hospital in 132 days, able to walk fairly well with the aid of crutches. He has been lost sight of.

[The first of these cases seemed at first to be a perfect success, but the accident of refracture, which has been repeatedly recorded in similar cases, delayed the cure which was eventually satisfactory. In the second case the occurrence of carbolic poisoning and subsequent putrefaction of the wound militated against success. The result, as observed when he left hospital, was not very gratifying, and the lame stiff joint, which served the purpose of progression very indifferently, was a somewhat disappointing outcome of much suffering, and long confinement to bed, on the part of the patient, and great anxiety and labour on the part of his attendants.]

2. *Gouging out carious Os calcis*.—Mahomedan male, æt. 28, wounded by a nail in left heel four months before admission. Inflammation ensued,

resulting in sinus leading down to carious bone. The sinus was laid freely open, and the carious bone scooped out by means of a gouge. The wound was dressed antiseptically, a layer of boracic gauze being invaginated, and loosely stuffed with carbolic gauze. Repair by granulation took place, and he left hospital with a sound heel after a stay of 60 days.

AMPUTATIONS.

V. A. 1.—Primary amputation of the four outer fingers.—Hindu male, æt. 12, sustained a severe lacerated wound of the right hand in the machinery of a jute mill. All the fingers had to be removed with exception of the thumb and index finger; the palm was lacerated, and a skin covering could not be obtained for it. The operation was performed antiseptically, and repair took place quickly and satisfactorily. The thumb and index finger retained free motion, and a very useful hand remained. He was discharged after a stay in hospital of 46 days.

2. *Secondary amputation of the thigh. a.—For gangrene.*—Mahomedan, æt. 26, sustained a compound fracture of the lower third of the leg by the wheel of a carriage passing over it. Gangrene set in on the third day, and the limb was removed by Carden's amputation under strict antiseptic precautions. The anterior flap was infiltrated with sanguineous serum, and the thigh swelled and the inguinal glands became irritated. The discharge was copious and grumous for a few days, and considerable constitutional disturbance existed. The wound remained aseptic and underwent repair by first intention. An excellent stump resulted. Stitches were removed in from four to twelve days, and catgut was used for drainage and proved efficient; no suppuration occurred. The patient was discharged in 58 days, able to walk with an artificial leg.

b. For spreading traumatic gangrene.—Hindu male, æt. 60, sustained compound fracture of the

upper third of left leg by the kick of a horse 20 hours before admission. Next morning the whole leg was found to be gangrenous. Temperature 102° , tongue dry. Carden's amputation was performed under strict antiseptic precautions. The knee joint was found full of sanguineous serum, and the subcutaneous cellular tissue of the limb tensely infiltrated with the same. Patient sank 15 hours after the operation. He never rallied, and death appeared to be due partly to shock and partly to septicæmia.

3. *Secondary amputation above the ankle joint (Syme's).* a.—*For gangrene.*—Mahomedan male, æt. 40; left foot crushed by the wheel of a trolley; foot became gangrenous after a week's stay in hospital. As much skin as remained alive saved; no stitches inserted. Operation performed antiseptically; wound remained sweet and healed by granulation. The skin was dragged over the face of the stump during the process of cicatrization. This was aided by careful application of straps. A sound stump eventually resulted, which bore the weight of the body well. Patient discharged 127 days after the operation, able to walk with a high-heeled boot.

b. Hindu male, æt. 40; left foot severely crushed by the wheel of a cart. Extensive suppuration and sloughing with severe constitutional symptoms set in a few days, and amputation became necessary to save both life and limb. Syme's incisions were followed as closely as the state of parts permitted. The heel flap sloughed in a few days, and a gangrenous abscess formed in the calf, spreading up along the tendo Achillis. A free counter-opening was made; the abscess healed, the wound became clean, and sufficient skin remained to cover the stump. The process of repair was protracted. He left hospital after a stay of 117 days in good health, and able to walk with a high-heeled boot.

4. *Secondary amputation of the arm for necrosis.*—Hindu female, æt. 25, left forearm bitten off by an

alligator a few days before admission. Wound sloughy and full of maggots. Under treatment the sloughs separated and healthy granulations appeared. A portion of the ulna remained, and an effort was made to save what was left of the forearm. She suffered from septicæmia and tetanus, which nearly killed her. Eventually the face of the stump healed, but several sinuses remained at the elbow, leading down to bare bone. A semilunar incision was made in front, the remains of the ulna removed and about an inch of humerus. The wound healed kindly, and she left hospital in good health and with a sound stump 211 days after admission and 60 days after the operation.

5. *Amputation of the leg for syphilitic caries.*—Hindu male, æt. 30. Suffered from syphilis 14 years ago; was salivated. An abscess formed over right tibia two years before admission, which burst and exposed the bone. A large ulcerated cavity remained, which was gradually growing larger. The bone was thickened and indurated above the ulcer. A fruitless effort was made to clean and heal the ulcer. Amputation by the modified circular method was performed at the seat of election. The cavity got filled with blood clots, which had to be removed by finger, after taking out a few stitches. The wound eventually healed soundly, and the patient was discharged 75 days after the operation, able to walk with the aid of a pin leg.

TUMOURS.

V. A. 1.—*Scirrhus of mamma.*—East Indian female, æt. 52; four months' duration; nipple retracted. Patient anæmic and very fat. Gland thoroughly removed by an elliptical incision including all suspicious skin; a mass of suspicious glands taken out of the axilla; skin edges brought into contact. Operation performed under strict antiseptic precautions. Discharge became grumous and

gangrenous about a week after operation, and remained so for six days; constitutional disturbance slight. The wound united by first intention, and discharge gradually became scanty and lymphic. Left hospital in 45 days with a sound linear cicatrix.

a. Epithelioma of lower lip.—Mahomedan male, æt. 55; said to be of 20 days' duration. Involved the whole of the lower lip, which was removed by a V-shaped incision; flaps were taken from beneath the chin and raised to the level of the teeth. Union took place, and patient left hospital in 21 days with a good substitute for the lost lip.

b. Epithelioma of larynx.—Hindu male, æt. 35; disease of 7 months' duration. Lost his voice about a year ago; a weakly man subject to chronic diarrhoea. A cauliflower-like growth, about the size of a child's fist, existed over the larynx, rather on the right side of it. The surrounding skin was somewhat infiltrated, and the body of the larynx and right lobe of the thyroid body were evidently implicated. The disease could be felt with the finger through the rima glottidis; the epiglottis seemed to be sound. Extirpation of the larynx and thyroid body was performed on the 15th November. An elliptical incision was made around the growth, including it and a liberal margin of skin. The larynx was isolated by dissection; the thyroid arteries tied with catgut and then divided. The trachæa was divided at the second ring, and the larynx removed by scissors. Epiglottis left behind. He was fed by nutrient enemata for a few days, then by means of an elastic catheter passed into the œsophagus through the wound. Healing took place slowly, but without serious hinderance. The anterior wall of the pharynx is deficient to the extent of about 2 inches; the trachæal opening is situated below it. He can swallow with the aid of an India-rubber bandage wound round the neck, is able to whisper when he places the palm of his hand over the opening, and an artificial larynx has been con-

structed for him. His health is fairly good (10th April 1883). There is no sign of recurrence of the disease.—(*Vide* "Indian Medical Gazette," Vol. XVIII, p. 24.)

3. *Cystic tumour of the scalp*.—Hindu male, æt. 30; congenital large dermoid cyst situated above upper left eyelid. Exposed by straight incision parallel to the eyebrow, and removed whole; found adherent to periosteum; healed by granulation. Remained 22 days in hospital.

4. *Molluscum of face*—Mahomedan male, æt. 27; eight years' duration. A pendulous cutaneous outgrowth, springing from the left lower eyelid; removed by elliptical incision; a V-shaped piece of skin dissected off the cheek to support the lid. Healing took place under careful management without eversion of lid. One month in hospital.

5. *Cartilaginous tumour of neck. a.*—Hindu male, æt. 38; one year's duration; situated on right side of neck deeply between parotid and submaxillary glands, bulging into fauces, about the size of an orange. Exposed by incision in submaxillary triangle, and shelled out with the finger. Operation performed antiseptically and drainage tube inserted. Wound healed in 8 days. Left hospital in 11 days.

b. Hindu male, æt. 20; eight years' duration; below left side of lower jaw, size of an orange; freely movable. Exposed by horizontal incision below border of jaw, and removed with a piece of the lower jaw to which it adhered; submaxillary gland left. Wound suppurated, but healed by granulation. Left hospital in 22 days with a linear cicatrix.

c. Hindu male, æt. 36; ten years' duration. An enormous tumour, weighing 14 lbs. after removal, hanging from the right side of the neck. Removed by elliptical incision. Vessels which were very large and numerous, as far as possible tied before division. Submaxillary gland and a few lymphatic glands also

removed. Wound left open and dressed with boracic ointment. Suffered from shock which passed off, and was succeeded by mild re-action. Wound was undergoing satisfactory repair by granulation until the 10th day, when secondary hæmorrhage took place from the facial artery, which had been divided close to its origin. This vessel was secured by ligature, but the bleeding recurred on the 11th day and carried him off.

4. *Fibroma of thigh*.—Ten years' duration; situated over the left Scarpa's triangle, freely movable. Removed by elliptical incision under antiseptic precautions. Wound healed by granulation in 47 days.

5. *a. Elephantiasis of scrotum. (a)*.—Mahomedan male, æt. 37. Lymph scrotum of three years' duration. History of orchitis, double hydrocele, and periodical fever. Scrotum covered with vesicles (dilated lymphatics) discharging a clear or pinkish fluid on being pricked. Redundant and thickened scrotal skin removed, skin of penis left, testes stitched together and covered with flaps drawn from the sides. Operation performed under strict antiseptic precautions. Wound remained sweet and healed in 33 days, leaving a linear cicatrix. Tumour weighed 15 ounces.

(*b.*) Mahomedan male, æt. 50; eight years' duration. Syphilis 20 years ago. History of gonorrhœal orchitis and fever; lymph vesicles on surface of scrotum. Tumour removed under antiseptic precautions. Pockets dug for testes, which were stitched together and to the surface of the perinæum; lateral flaps stitched over them by continuous catgut sutures. Testes adhered to each other and to flaps. Large abscess formed in right groin. Penis freed with scissors on two occasions. Final result satisfactory. Remained in hospital 77 days. Tumour weighed 10lbs.

(*c.*) Hindu male, æt. 32 ; ten years' duration. History of orchitis and periodical fever. Lymph vesicles on scrotum. Elephantiasis of both legs. Operations as in case (*b*). Double hydrocele ; wound putrefied and flaps partially sloughed. Suffered from carbolic poisoning. Secondary operation necessary for removal of thickened perinæum. Penis freed by scissors on three occasions. Final result satisfactory. Discharged in 114 days. Tumour weighed 23lbs.

(*d.*) Mahomedan male, æt. 38. Lymph scrotum of ten years' duration. History of periodical fever. Skin of penis healthy. Scrotal skin removed as in case (*a*). Suppuration occurred in each groin, which delayed recovery. Wound healed in 31 days. Tumour weighed 5 ounces.

(*e.*) Hindu male, æt. 40 ; three years' duration. Large hydrocele on right side, extending upwards along the cord, and entering the abdomen through the ring. Skin of penis and scrotum removed in the usual way. Unobliterated processus of right side dissected off the cord and sides of dilated ring of this side brought together by strong catgut thread ; testes stitched in pockets and skin flaps brought over them. Right testicle became gangrenous, and was removed two days after operation ; wound putrefied and septic suppuration ascended through ring into the right iliac fossa. Counter-opening and drainage resorted to ; discharge profuse and fœtid. Diarrhœa and pneumonia set in, and patient died of exhaustion 42 days after operation. Tumour weighed 8½ ounces.

(*f.*) Hindu, æt. 41 ; eight years' duration. History of hydrocele and fever. Operation as in case (*b*). Six pints of fluid in left tunica, which was continuous with an unobliterated processus vaginalis ; 10 oz. in right tunica. Wound remained aseptic and healed kindly. Penis had to be isolated on two or three occasions. Discharged in 73 days. Weight of mass 18lbs. 2oz.

(g.) Mahomedan, æt. 20 ; four years' duration. History of inflammation and fever ; vesicles on scrotum. Excised as in case (b). Remained aseptic ; excellent result. Discharged in 63 days. Tumour weighed 13½ ounces.

(h.) Hindu, æt. 43 ; twelve years' duration. History of periodical fever and sloughing. Excised as in case (b). Right tunica thickened and cartilaginous, contained about 5oz. of fluid. Wound remained sweet. Satisfactory result in 70 days. Tumour weighed 8lbs.

(i.) Hindu, æt. 36 ; six years' duration, occasional fever. Removed as in case (b) ; tunica partially adherent. Wound remained aseptic. Discharged in 72 days. Tumour weighed 7lbs. 7 oz.

(j.) Hindu, æt. 37 ; two years' duration ; periodical fever. Removed as in case (b). Tunica inflamed. Wound remained sweet, but repair slow, owing to inflamed state of parts. Discharged in 92 days. Tumour weighed 1lb.

(k.) Mahomedan, æt. 32 ; two months' duration. History of inflammation and fever. Removed as in case (b). Hydrocele on both sides. Wound remained aseptic, cords swelled considerably. Good result in 72 days. Weighed 14 ounces.

(l.) Hindu, æt. 21 ; one month's duration. History of gonorrhœa and syphilis. Secondary eruptions. Removed as in case (b). Double hydrocele ; wound putrefied ; burrowing took place in left groin. Recovery slow. Final result good. Discharged in 135 days. Tumour weighed 1lb. 4 oz.

(m.) Hindu male, æt. 38 ; one year's duration ; vesicles on scrotum ; syphilis two months ago. Excised as in case (b). Wound remained aseptic. Cicatrization of penis slow. Remained 97 days in hospital. Tumour weighed 1lb. ½oz.

(n.) Mahomedan, æt. 45. Had irreducible right inguinal hernia on admission ; had been down

for 5 hours ; was reduced in four hours after application of ice. Large hydrocele on right side, smaller on left. Scrotum thickened (elephantoid). Ablation of scrotum performed four days after. Skin of penis unaffected and not removed. Hydroceles emptied and redundant tunicæ removed. Sac of hernia dissected out, ligatured at neck and cut off. Pillars and sides of inguinal canal brought together by strong catgut ligature. Pockets made for testes in the usual way ; testis stitched together and skin drawn over them by continuous suture. The right testis and cord exhibited signs of strangulation, and were removed next day. The wound putrefied and suppurated. Burrowing of matter took place along the track of both cords requiring free counter-opening and drainage. Considerable constitutional disturbance at this time. Result eventually satisfactory. No sign of return of hernia, and scrotal wound healed up firmly. Discharged in 42 days. Tumour weighed 13oz.

(*a.*) Hindu, æt. 30. Syphilis 16 years ago ; tumour of five years' duration. History of periodical fever and swelling ; latter reduced by free exudation from surface of tumour on subsidence of fever. Weakly man subject to dysentery. Operation as in case (*b*). Varicose veins on right side tied with catgut. Wound remained sweet for a week. Tetanus set in in 9 days and carried the patient off in 3 days. Weight of tumour 10 oz.

(*p.*) Hindu, æt. 26 ; hernia testis of left side, with elephantoid swelling of scrotum. History of gonorrhœa and orchitis. Ablation of scrotum performed as in case (*a*) ; skin of penis being left. Infiltrated substance of left testis protruded through a narrow opening in the tunica albuginea, which was freely notched ; testis stitched together and enclosed in pockets as usual. Wound remained aseptic and underwent slow but satisfactory repair. Discharged in 98 days. Tumour weighed 6 ounces.

(*q.*) East Indian, æt. 30 ; four years' duration. History of orchitis and fever. Operation as in case (*b*). Wound remained aseptic and underwent satisfactory repair. Cicatrization of penis tedious. Remained 90 days in hospital. Tumour weighed 3lbs. 6oz.

(*r.*) Hindu, æt. 38 ; two years' duration. History of hydrocele and inflamed scrotum. Left reducible inguinal hernia. Operation as in case (*n*). Wound putrefied, skin flaps sloughed, and suppuration ran up the left cord. Sloughs separated and wound was granulating, when suppurative parotitis supervened with fever of typhoid type. Patient sank 24 days after operation.

(*s.*) Hindu, æt. 35 ; three years' duration. History of gonorrhœa, phimosis and periodical fever. Operation as in case (*b*). Wound remained aseptic. Good result in 68 days. Tumour weighed 2lbs. 8oz.

(*t.*) Hindu, æt. 40 ; ten years' duration. History of orchitis and periodical fever ; operation as in case (*b*). Wound remained aseptic and healed without suppuration. Remained 72 days in hospital. Tumour weighed 1lb. 6oz.

(*u.*) Mahomedan, æt. 40 ; two years' duration. History of abscess of scrotum. Sinus at fundus of scrotum. Removed as in case (*b*) ; tunicæ adherent on both sides. Wound remained sweet and healed kindly. Discharged in 90 days. Weight of tumour 8lbs. 12oz.

(*v.*) Hindu, æt. 42 ; eight years' duration. History of hydrocele and periodical fever. Operation as in case (*b*). Double hydrocele of very large size. Wound remained sweet. Symptoms of carbolic poisoning noticed a week after operation ; dressings changed to boracic. Symptoms of tetanus appeared 9 days after operation, which proved fatal in two days. Tumour weighed 32lbs.

(*w.*) Hindu, æt. 40 ; eighteen months' duration. History of syphilis and periodical fever. Tumour

removed as in case (*b*). Wound remained aseptic and healed kindly. Discharged in 79 days. Tumour weighed 5lbs. 6oz.

(*x*.) Hindu, æt. 25 ; five years' duration. History of hydrocele and periodical fever. Removed as in case (*b*); tuniçæ adherent. Wound remained aseptic and underwent satisfactory repair. Left hospital in 74 days. Tumour weighed 4lbs. 12oz.

(*y*.) Hindu, æt. 18 ; ten years' duration. History of orchitis and fever. Operation as in case (*b*). Wound remained sweet and healed without hindrance. Discharged 71 days after operation. Tumour weighed 1lb. 2oz.

(*z*.) Hindu, æt. 37 ; five years' duration. History of inflammation and fever. Lymph vesicles on scrotum. Patient very fat ; consumed about 60 grains of opium a day by smoking. Removed as in case (*b*). Double hydrocele. Wound putrefied and suppurated. Lateral flaps melted away somewhat and burrowing of matter took place in groins and thighs. Result eventually satisfactory. Left hospital in 90 days. Tumour weighed 5lbs 12oz.

(*aa*.) Hindu, æt. 25 ; eight years' duration. History of scrotal inflammation and periodical fever. Lymph vesicles on scrotum. Operation as in case (*b*). Small double hydrocele. Secondary hæmorrhage on 2nd and 4th day. Stopped by ligature of bleeding points. Wound putrefied and suppurated and burrowing of matter took place along left cord. Final result good. Discharged in 100 days. Tumour weighed 2lbs.

(*bb*.) Hindu, æt. 23 ; one year's duration. History of inflammation and periodical fever ; deep sinus in fundus of scrotum ; spleen much enlarged. Sinus healed under treatment. Another scrotal abscess formed, and was successfully treated by evacuating incision. Tumour excised as in case (*b*). Wound remained aseptic. Result good. Discharged in 81 days. Tumour weighed 1lb. 14oz.

[The method of operating adopted in these 28 cases was fully detailed in a clinical lecture published in the November number of the *Indian Medical Gazette*. The novelties presented by this series as compared with those previously published are—(1) the new method of applying the elastic cord; (2) the digging of pockets for the reception of the testes by separating the layers of the scrotal fascia down to the pubic arch, the testes being stitched in position with catgut as previously practised, and (3) the use of boracic ointment and lint for dressing. This latter was rendered necessary in consequence of serious symptoms arising in a few cases from the absorption of carbolic acid by the large wound resulting from this operation. The success of these expedients has been marked, and although healing has not been accelerated (owing to the steps adopted to preserve the length of the penis) the process of repair has been bereft of local suffering, constitutional distress and offensive smell. In 3 of the cases (*a. d. h.*) the skin of the penis was preserved and remained healthy. Two were cases of lymph scrotum. This plan of treatment may also be adopted in cases of large hydroceles with redundant and, perhaps, slightly hypertrophied scrotal skin. In 2 cases (*e. f.*) the hydrocele extended along the cord into the abdomen. This was due to the tunica vaginalis being unobliterated inferiorly. The tunica was dissected out, and the dilated external abdominal ring closed with catgut. In one case putrefaction invaded the wound, septic suppuration ascended along the cord, and death eventually took place by septicæmia. In 2 cases (*u. v.*) the tumour was complicated with hernia; these will be referred to further on. In all cases in which putrefaction was absent, repair took place more satisfactorily than when the wound became septic. Of the four deaths, two were due to septicæmia and two to tetanus.

The largest tumour weighed 32 lbs. 8 oz., the

smallest 5 oz., the average being 4 lbs. 15 oz. The average period of detention in hospital, excluding fatal cases, was 78 days. The death-rate was equal to 14'3 per cent. of operations.]

*b. Elephantiasis of labium. (a).—*Mahomedan, æt. 30 ; one year's duration. History of syphilis. All the external parts involved ; stricture of rectum and recto-vaginal fistula ; condylomatous masses in the vestibule. Disease removed partly by knife and partly by ecraseur : tumour weighed 15½ oz. The wound became putrid and unhealthy action set in. Symptoms of carbolic poisoning were observed, and the dressing promptly exchanged for boracic. Patient died of pneumonia 7 days after operation.

(b). Hindu, æt. 26 ; three years' duration, of syphilitic origin ; involved all the external organs. Removed by incision after the base of the tumour had been tightly ligatured with whipcord passed through it by means of a hernia needle ; mass weighed 3 lbs 4 oz. Wound healed by granulation in 140 days.

(c). Hindu, æt. 24 ; four years' duration. History of suppurating bubos. Both labia majora affected. Tumours excised after the base of them had been tied lightly with whipcord to prevent loss of blood. Weighed 6 lbs. 4 oz. Wound healed by granulation in 106 days.

6. *Excision of piles. (a).—*Hindu male, æt. 30. One large pile, partly external and partly internal, removed by clamp, scissors and cautery. Healed satisfactorily in 10 days.

(b). European male, æt. 38. Anus surrounded by large piles which protruded and bled at stool, and had to be replaced mechanically. 10 years' duration. Removed in sections by scissors, clamp and cautery. Satisfactory result in 39 days.

(c.) European male, æt. 49 ; 5 internal piles. removed by scissors after ligature of their base with catgut. Good result in 34 days.

VII. 1. *Lithotomy*

(a.) Mahomedan male, æt. 60; symptoms of 3 years' duration; urine alkaline, traces of albumen. Left lateral lithotomy performed; bilateral section of prostate made, stone weighed 1 oz. 6½ drs.; made a good recovery in 37 days.

(b.) Mahomedan male, æt. 60; symptoms of 3 years' duration. Patient a feeble old man, addicted to opium, consumed 16 grains a day; stone extracted by median lithotomy with bilateral section of perinæum, weighed 1 oz. 4 drs. 6 grs. Got an attack of diarrhœa about a week after operation. Removed by his friends in a low state on the thirteenth day; wound clean. It was subsequently ascertained that the bowel complaint subsided, and he made a good recovery.

(c.) Hindu male, æt. 28; symptoms of three years' duration. Sound impinged on the surface of the stone easily, but could not enter the bladder. Stone felt with unusual distinctness in the situation of the prostate per rectum, median section made in the perinæum, a Λ shaped incision made in continuation on each side of the rectum. A similar incision opened the prostatic sac, and the stone was extracted by straight forceps. It was found to occupy the prostatic urethra, the bladder being empty and contracted, the stone weighed 4 oz. 2 drs.; recovery tedious owing to persistence of the perinæal opening. This was cauterised by a hot iron, but a small fistula remained when he was discharged 132 days after the operation.

(d.) Mahomedan male, æt. 30; symptoms of 10 years' duration. Left lateral lithotomy performed, and a stone weighing 4 oz. 6 drs. extracted with some difficulty; wound became sloughy, and patient suffered from diarrhœa, but eventually a good recovery ensued in 67 days.

2. *Lithotripsy*.—Mahomedan male, æt. 36; symptoms of 2 or 3 years' duration. Stone crushed on

three occasions, on 3rd, 10th, and 14th of March; suffered from a smart attack of fever after the first operation; very little vesical irritation. Remained 44 days in hospital.

VIII. Removal of foreign body from nose.—Hindu male, æt. 5. Had introduced a piece of sola or pith into the right nostril five months ago. Inflammation and swelling ensued, the nostril was plugged, and there was a constant discharge of pus and blood from it. The mass had swelled and become firmly impacted. It was removed partly by a director sweeping the cavity from above downwards, and partly by forceps. Some epistaxis ensued, but not of sufficient consequence to necessitate plugging. The boy left hospital in a few days.

2. *Removal of foreign body from the urethra.*—Hindu male, æt. 32. Had suffered from chancre 16 years ago. The ulcer was behind the corona glandis inferiorly, and left a cartilaginous induration which caused great contraction of the urethra in this position. He subsequently contracted gonorrhœa which was followed by gleet and stricture in the membranous part of the urethra. On the day preceding his admission he had retention for which a medical practitioner tried to pass a No. 4 catheter. It was forced through the anterior structure with great difficulty, and a false passage was made into the erectile substance of the penis immediately behind the stricture. Failing to reach the bladder, the operator tried to withdraw the instrument, and in doing so, broke it at the junction of the shaft and curve.

The latter remained behind and could be felt on handling the penis. The stricture was divided by urethrotomy and the fragment removed by forceps; the posterior stricture was subsequently dilated by bougies; slight bleeding persisted for 24 hours and then ceased. Urine was passed in good stream,

and the patient insisted on leaving hospital in three days.

IX. 1. Tracheotomy.—Hindu female, æt. 28. Had been admitted about 4 months previously into the second surgeon's ward for acute laryngitis. Tracheotomy was found necessary on account of urgent dyspnœa. After two months' detention in hospital she was discharged apparently well; she remained well for a month when the laryngeal symptoms recurred with an attack of fever, the difficulty of breathing again becoming alarming, she sought re-admission into hospital, when it was found necessary to repeat the operation (at the former site) and re-introduce a tube. This gave complete relief. She remained 137 days in hospital; the glottis continued so thickened and contracted that she could not breathe comfortably without the tube. She was subjected to various plans of treatment. Her general health was good, and becoming impatient of detention, she was provided with a tube and allowed to leave hospital; she has not been heard of since.

2. Herniotomy.—*a.* Hindu male æt. 40. Right inguinal oblique hernia (scrotal epiplocele), 4 years' duration.

Descended 4 days previous to admission. Taxis tried in vain with and without chloroform before and after admission. Suffered from vomiting and obstruction of bowels and increasing local tenderness. Pulse regular, good strength; surface warm, tongue furred, moist; general health good. Tumour tense, painful, dull on percussion and fluctuating. Hydrocele fluid; withdrawn from lower part by a fine trochar, and sanguineous serum from upper.

Oblique incision in right groin, coverings divided *seriatim*, sac opened. Sanguineous serum gushed out and strangulated omentum presented. Latter pulled down till healthy structure came into view; tied with 4 catgut ligatures at line of demarcation, and strangulated portion amputated. Sac dissected

out, tied at neck and removed. Stump reduced into canal and pillars, and sides of canal brought together by four-ply catgut sutures, ends left long for drainage. Operation performed under strict antiseptic precautions.

Temperature never exceeded 100° , and became normal in four days. Vomiting subsided. Bowels became regular in 15 days. Required two doses of castor oil before then; wound remained aseptic; discharge gradually became lymph and scanty. Drain came away in 12 days, wire stitches removed in 8, and horse-hair in 11 days. Wound healed in 15 days.

Remained 48 days in hospital. Centre of cicatrix depressed, adherent to an indurated mass occupying canal. Superficial ring firmly adherent to cord. No impulse nor descent. Hydrocele tapped and injected successfully before he left hospital. Not heard of since.

b. Hindu male, æt. 35. Oblique inguinal hernia (right) of 7 years' duration.

Came down 6 hours before admission; vomited thrice; swelling tense and painful; taxis with ice and chloroform applied without avail. 1 oz. of sanguineous fluid withdrawn by fine canula. Very anxious and restless; perspiring freely. Bowels obstructed.

Performed 12 hours after descent. Sac laid open; congested; contained a coil of congested small intestine and very fat mesentery. Gut emptied and reduced. Sac dissected out and tied at neck; pillars &c., ligatured in the usual way. Operation performed antiseptically.

Obstruction continued with dry retching and free perspiration. Abdomen became tympanitic and thoracic viscera were compressed. In $4\frac{1}{2}$ days the operation of laparotomy was performed, seat of obstruction found, gut liberated and intestine punctured.

Died in 10 hours after second operation— $5\frac{1}{4}$ days after the first. Recent peritonitis and paralysis of

intestines. Herniotomy wound aseptic and in process of satisfactory repair.

(c.) Hindu male, æt. 40. Right oblique inguinal hernia of 5 years' duration.

Descended 6 hours before admission ; tapped and sanguineous fluid removed, ice applied ; reduced after 6 hours. Came down again after a fortnight. Partly reduced after tapping. Symptoms of prostration. Cold sweat, feeble pulse, &c.

Sac laid open. Knuckle of small intestine found acutely inflamed, bent at an acute angle, limbs of angle glued to each other and to mesentery. It was stretched, lymph peeled off and reduced. Sac and canal dealt with as in case *a*. Operation done antiseptically.

Wound remained aseptic for a week ; then putrefied and suppurated and gaped ; matter formed in canal. Healed slowly by granulation. Constitutional symptoms gradually improved under treatment. Bowels became regular ; strength and flesh returned.

Remained in hospital 66 days. Depressed cicatrix in right groin. Canal and outer ring firmly adherent to cord. No descent or impulse ; abdominal wall lax ; discharged with a truss as a precaution.

Seen 10 months after discharge in excellent health ; no descent of hernia.

d. Hindu male, æt. 32. Congenital hernia, right side. Came down 12 hours before admission ; irreducible. Patient restless ; vomited thrice after admission. Bowels acted after enema. Ice and taxis applied without avail ; 7 oz. of clear fluid removed by canula. Sac exposed ; external ring nicked ; contents partly reduced ; sac laid open ; full of omentum adherent by a band to bottom of sac ; band tied and divided ; omentum returned. Sac dissected off, tied at neck and removed ; testes and cord pulled out of scrotum, returned after trimming and stitched to fundus of scrotum. Sides of canal brought together as usual ; drainage tube passed from wound through

incision in fundus of scrotum. Pursued aseptic course. Dressings changed after 1, 3, 4, 3 and 3 days; wire stitches removed in 8 days, and horse-hair in 11. Drain came away in 14. Healed by first intention. No inflammation. Discharged 25 days after operation. Parts consolidated; linear cicatrix in groin; ring closed; no impulse; no sign of descent.

e. Hindu, æt. 45. Left oblique inguinal hernia. Down 48 hours; very tense and tender. A small quantity of sanguineous serum removed by tapping; very restless and anxious; vomited. Ice applied for 5 hours and taxis tried without effect. Sac exposed and opened; contained congested omentum and a knuckle of large intestine. Both reduced. Several bands of adhesion between omentum and interior of sac divided. Sac dissected out, ligatured at neck, and removed. Pillars, &c., brought together with catgut. Suffered from shock, which was succeeded by prostration. Abdomen became tympanitic; hiccough set in; got stercoraceous vomiting; temperature subnormal. Died of exhaustion 5 days after operation. On dissection the intestine, which had been herniated, was found to be gangrenous. Septic peritonitis had occurred. Omentum had retained vitality.

3. *Operation for the radical cure of hernia.*—

a. European male, æt. 48, sailor. Right direct inguinal hernia of 18 years' duration. Underwent operation by Wood's method a year ago; hernia descended after 66 days. Sac exposed by dissection, neck tied with catgut by three successive loops; body of sac removed; stump of neck placed in canal; pillars and sides of canal brought together by double catgut ligatures, ends left long for drainage. Operation performed under strict anti-septic precautions. The sac was unobliterated, somewhat contracted at neck where adhesions existed to ring. Wound remained aseptic and healed by first intention. A troublesome sinus remained in

track of drain. Finally healed, with depressed cicatrix. Discharged in 118 days with a linear cicatrix. Canal closed; no impulse nor descent. Was re-admitted into hospital for sloughing dysentery, of which he died $7\frac{1}{2}$ months after the last operation.

A *post-mortem* examination was held, and the ring found completely obliterated and firmly adherent to the cord. There was a depressed cicatrix of the peritoneum opposite the internal ring to the inside of the epigastric artery where the neck of the sac had been tied. No trace remained of the catgut ligatures.

b. Mahomedan male, æt. 68. Right oblique inguinal hernia of 16 years' duration. Scrotal epiplocele. Incarcerated for 4 days. Reduced after 18 hours' application of ice. Same operation. Cord voluminous; veins of cord varicose. Wound putrefied, inflamed and suppurated. Stitches removed on 5th day and tube inserted. Bagging of matter in scrotum requiring counter opening. Wound finally healed by granulation. Discharged in 58 days with linear cicatrix in groin. Canal blocked. No impulse nor descent. Not heard of since he left hospital.

c. Mahomedan male, æt. 45. Right oblique inguinal hernia of 6 years' duration (scrotal). Ring admitted 2 fingers. Large hydrocele on left side tapped; $1\frac{1}{2}$ pint of hydrocele fluid removed. Same operation. Wound remained aseptic and healed by first intention. Scrotum tapped twice and sanguinous serum let out. Discharged in 30 days. Canal closed round cord. No descent nor impulse. Not heard of since.

d. Mahomedan male, æt. 60. Right oblique inguinal hernia (scrotal). Admitted with incarcerated epiplocele, reduced after application of ice for 20 hours. Same operation. Sac large. A thick layer of fat between neck of sac and spermatic fascia. Wound remained aseptic but inflamed and suppurated. Symptoms of carbolic acid poisoning appeared

six days after operation; smoky urine, fever, delirium, dry tongue, &c. Boracic dressings substituted. Lungs became congested. Removed 10 days after operation by friends. It was ascertained that he died two days afterwards.

e. East Indian male, æt. 18. Right oblique inguinal hernia of $1\frac{1}{2}$ years' duration. Tumour size of a duck's egg, scrotal. Operation as in case *a*. Wound remained aseptic and healed by first intention. Wire stitches removed on 7th and horse-hair on 10th day. Drain came away on 7th day. Discharged in 36 days. Ring and canal closed. No impulse; cure apparently satisfactory. Not heard of since.

f. Jew, æt. 40. Right oblique inguinal hernia of 6 years' duration (scrotal). Ring admitted three fingers. Tumour large, descending on the slightest exertion. Same operation. Sac very large. Wound pursued aseptic course, healing by first intention. Wire stitches removed in 6 and horse-hair in 9 days. Drain came away in 8 days. Serous accumulation in scrotum; removed by repeated tapping. Discharged in 48 days; canal closed round cord. No impulse nor descent. Cure apparently satisfactory. Not heard of since.

g. Mahomedan male, æt. 50. Right oblique inguinal hernia (encysted). Large hydrocele on right side, tapped and injected 14 days before the operation. Usual operation. Sac double, consisting of unobliterated processus vaginalis and a diaphanous peritoneal protrusion into its cavity. Boracic lint used in dressing wound. Wound healed by first intention; no putrefaction nor inflammation. Stitches removed on 8th day and drain came away on 10th. Discharged in 37 days with a liner cicatrix adherent to the cord. No impulse or descent. Hydrocele radically cured.

h. Hindu male, æt. 42. Right oblique inguinal hernia of 5 years' duration. Entero-epiplocele. Ring

admitted two fingers. Usual operation. Boracic lint used in dressing. Remained aseptic and healed by first intention ; stitches removed on 5th and 9th day, and drain came away on 9th day. A small membranous slough came away through track of drain. Discharged in 53 days. Depressed cicatrix in groin adherent to cord. No impulse below ring ; no descent of hernia.

i. European male, æt. 56. Right inguinal hernia of 12 years' duration (scrotal) ; ring admitted two fingers. Constant descent of intestine which was not prevented by a truss. Gut easily returned, but a hard lump remained in sac. Sac exposed—found to be of hour glass shape. Lower cavity contained a mass of matted omentum adherent by bands to the interior of the sac. The omentum was ligatured in sections with catgut, the lump removed and the rest returned. The operation was completed in the usual manner.

The wound remained aseptic and healed by first intention. Abdomen tympanitic for three days. No inflammation or fever ; drain came away on 10th day. Patient left hospital 35 days after the operation with a linear cicatrix in right groin, and no tendency to reproduction of hernia.

He reported four months afterwards that the parts were quite comfortable, and that there was no sign of return of the hernia.

j. East Indian male, æt. 45. Right oblique inguinal hernia of 4 years' duration. Operated on by Wood's method in 1878. Remained up for 4 years. Descended recently. Suffers from asthma. Usual operation. Sac bilocular, presenting two bags and an intervening septum. Wound putrefied, inflamed and suppurated. The whole of the stump of the sac came away in the form of a slough. Pus burrowed into the scrotum and abdominal wall requiring counter openings and insertion of drainage tubes. Remained 209 days in hospital ; numerous subcutaneous abscesses formed on the chest and abdomen—

requiring incision and drainage. Made a satisfactory recovery in the end. Hernia radically cured.

k. Armenian male, æt. 25. Suffered from a fullness of the left groin from infancy. Pronounced symptoms of rupture were observed one and-a-half years ago. Ring dilated, admitted two fingers. Hydrocele on the same side; health good. The usual operation was performed under strict antiseptic precautions. The tunica vaginalis was emptied and a portion of it removed. The wound remained sweet and healed throughout the greater part of its extent by first intention. An abscess formed in the scrotum requiring a counter opening and drainage. He remained 78 days in hospital, and left with the wounds soundly healed, the parts contracted and consolidated and the hernia satisfactorily cured.

l. Mahomedan male, æt. 20. Left oblique inguinal hernia (scrotal) of 7 years' duration. Ring admitted two fingers; same operation. Two sacs found, a larger superiorly, and a smaller containing matted omentum adherent to the inner surface inferiorly. The adhesions were divided, the omentum returned, and the operation completed in the usual way. The upper wound healed kindly, and no abdominal symptoms occurred. Suppurative inflammation arose in the scrotum requiring a free opening at its fundus through which a large quantity of pus and several stringy sloughs were withdrawn. A drainage tube was inserted and the cavity gradually closed. He was discharged 55 days after the operation in good health, and without any sign of recurrence of the hernia.

m. European male, sailor, æt. 36. Reducible oblique inguinal hernia of the right side of 17 years' duration. He had been operated on for its radical cure at Malta 15 years ago. He was detained in hospital for 2 months, but the hernia descended four months after his discharge. The ring easily admitted two fingers. He was a robust looking man; had

suffered from scurvy, but there were no signs of it now present except some ulceration of the gums. The usual operation was performed. The tunica vaginalis was found to be distended with fluid. It was emptied and part of it removed. An opening was made through the fundus of the scrotum and a drain placed in it. The patient had some febrile reaction, and the scrotum was found swollen, and ecchymosed on the day after operation. Next day the swelling had increased; the penis was œdematous, and it became necessary to remove the stitches which were causing tension. On the third day the scrotum, lower abdomen and thighs were found gangrenous, and the man was in a state of typhoid prostration. He died of exhaustion in course of the afternoon.

[These notes contain records of 20 cases in which the sac was exposed, the neck of it tied, the sac itself excised, and the inguinal canal closed with catgut ligatures after the manner fully described in the *Indian Medical Gazette*, Vol. XV. pp. 227—255. In two of the cases (V. 5 a. (n) (r) *supra*) the hernia existed as a complication of scrotal tumour, and the operation was performed simultaneously with that of removal of the elephantoid swelling; one of these recovered notwithstanding that a large hydrocele had to be evacuated and most of the tunica removed, that castration became necessary next day, and that putrid cellulitis took place, causing extensive burrowing and necessitating free counter opening. The second case died of septicæmia 24 days after operation. In this case the wound putrefied and parts sloughed. In five of the cases the operation was performed in addition to that of herniotomy which was demanded by strangulation of the hernial contents. In three of these complete recovery and radical cure resulted. Two proved fatal—one from persisting obstruction, and the other from gangrene of the herniated intestine. Of the 13 cases in which the operation was

resorted to for cure of a reducible hernia 11 recovered, and, as far as is known, the operation was entirely successful. Two cases proved fatal, one of them was an elderly man who exhibited symptoms of carbolic acid poisoning. The lungs became congested; he was removed in a moribund state, and died 12 days after operation. The other man died of spreading traumatic gangrene on the fourth day. His system was damaged by a previous attack of scurvy.

The conclusions which I consider that these cases and those previously reported justify, are:—

1. That the operation effectually obliterates an existing hernia in all cases and prevents the formation of another rupture on the same side in the great majority of cases.

2. That its performance does not add materially to the risk when strangulation or incarceration demands surgical interference.

3. That when performed in a young and healthy subject with strict antiseptic precautions, it is not accompanied with any material risk to life, but

4. When the subject is old or sickly, or when the wound becomes septic, that considerable danger to life exists.]

4. *Fistula in ano*.—(a). Jewess, æt. 37; complicated with external and internal piles and fissure; 8 months' duration; fistula divided and piles removed by scissors. Left hospital in 6 days in process of cure.

(b). Mahomedan male, æt. 35. Blind external fistula of 2 months' duration, following ischiorectal abscess; laid open into rectum. Wound healed by granulation. 61 days under treatment.

(c). European male, æt. 32. Complete fistula of 6 months' duration, laid open in the usual way. Operation had to be repeated owing to premature union of lips of wound. Result finally satisfactory in 66 days.

5. *Perinæal section*—(a). Mahomedan male, æt. 25.

Fell off a coach-box 4 days before admission on to a piece of wood which came into violent contact with his perinæum. Passed bloody urine for 2 days ; hard painful swelling in perinæum ; perinæum incised ; clots removed ; full sized catheter introduced into bladder, wound gradually closed. No. 12 catheter introduced every third day. Left hospital in 32 days with the perinæal wound fully closed and able to make water in full stream per urethram.

(b.) Hindu male, æt. 55. Scrotal fistula following abscess, through which urine dribbled ; 9 months' duration ; history of gonorrhœa and syphilis. Sinus slit up and No. 12 catheter passed into bladder. A grating sensation was experienced when the instrument reached the membranous part of the urethra. Urine continuing to dribble, a grooved staff was introduced 12 days afterwards, and a free perinæal section performed. Two small calculous masses were removed from the cavity of the fistula which was thoroughly laid open. After a few days No. 12 catheter was introduced, and this was repeated every third day. The wound contracted ; but the patient got dysentery, and was taken away by his friends before the cure was complete. Remained 43 days in hospital after the second operation.

(c.) Hindu male, æt. 30. Suffered from gonorrhœa 10 years ago, and again 6 years ago. This attack was followed by orchitis and hydrocele of the left side. An abscess formed in the perinæum 6 months before admission. It burst and left a sinus in the fundus of the scrotum through which urine escapes. The hydrocele was tapped about this time. Since then both penis and scrotum have undergone elephantoid enlargement, attaining the size of a coconut ; penis embedded ; urethra strictured.

The stricture was in the first instance dilated by bougies till it admitted a No. 12. The escape of urine continuing, a grooved staff was introduced into

the bladder and the fistula thoroughly laid open and stricture divided.

Several vessels had to be tied. Secondary hæmorrhage took place ten days after the operation which was stayed by tying a bleeding point and plugging. The wound gradually contracted. A full sized instrument was introduced every third day. He would not have the tumour removed, and left hospital 48 days after the operation.

d. Hindu male, æt. 24. Had suffered from gonorrhœa which was followed by two abscesses, one in the hypogastric region and another in front of the scrotum at the root of the penis. An instrument passed into the urethra entered the latter and pus and blood welled out. A perinæal section was performed without a guide, and a soft instrument passed into and through the penile urethra from behind forwards through the wound. This was retained for a day or two, and a drainage tube was then put in its place and retained. The abscesses were at the same time laid freely open; their cavities gradually filled up, and the resulting fistulæ closed. The tube was withdrawn, a full sized bougie was introduced into the bladder every third day, and finally the perinæal wound also closed up. Patient left hospital in 63 days perfectly recovered.

(e.) Mahomedan male, æt. 30. Had injured his urethra by a fall 7 years previously. Stricture resulted. 20 days before admission an abscess formed in the perinæum, which burst and left a fistula through which urine escaped during micturition. No instrument could be passed through the stricture, though repeated attempts were made. Perinæal section was performed without guide, the stricture divided, and a No. 12 catheter passed into the bladder. This was repeated periodically; the perinæal wound gradually closed and patient left hospital after 46 days' treatment.

6. *Incision for hæmatocele.*—*(a.)* Hindu male, æt. 35.

Admitted with a very tense and painful swelling of left side of scrotum which had been mistaken for a strangulated hernia. Constipation had existed for 8 days, patient had vomited, and was in a state of prostration. On tapping the swelling very foetid fluid of a yellow color was emitted. The cord was exposed in the groin. It was oedematous, but no sign of any hernial sac could be seen. The scrotal swelling was then laid open by free incision, and a large quantity of putrid clot and grumous liquid removed. It was dressed for granulation. Considerable constitutional disturbance remained for a day or two, but gradually subsided; both wounds healed by granulation. An abscess formed on the right side of the scrotum which was laid open. Eventually an excellent recovery took place in 32 days; the wounds having cicatrized, the scrotum resumed its natural size.

(*b.*) Hindu male, æt. 24. Suffered from hernia of the right side which was tapped a year ago. Re-accumulation taking place, it was again tapped 4 days before admission. The fluid was observed to be sanguineous, and a solution of carbolic acid was injected. Great pain and swelling and constitutional disturbance followed. On exploring the tunica it was found to be tensely filled with bloody putrid material. It was laid open freely and emptied and dressed with boracic gauze. The wound gradually filled up, and patient left hospital in 48 days with a linear cicatrix on a scrotum of normal size. He had an attack of surgical scarlatina during convalescence.

(*c.*) Hindu male, æt. 40. Suffered from hydrocele of left tunica and periodical fever. It was tapped and injected with iodine two months before admission. This was followed by inflammation and swelling. The latter continued to increase. The tunica was freely laid open and a large quantity of sanguineous fluid and lymphic clot evacuated. The wound healed by granulation in 55 days, the cavity of the tunica undergoing complete obliteration.

7. *Recto-vaginal fistula*.—East Indian female, æt. 32. Admitted with ulceration of rectum, external piles, and a fistulous communication between the vagina and rectum, situated about half an inch from the anal verge, giving rise to very unpleasant suffering. She was in an advanced stage of phthisis and subject to diarrhœa. The fistula was laid open by division of the perinæum and the wound dressed with boracic ointment. This contributed to cleanliness and comfort. She died in a month of the phthisis and diarrhœa ; the wound was clean and granulating.

8. *Large abscesses.*

a. *Dorsal abscess*.—Hindu male, æt. 36. Curvature of the cervical spine, associated with abscess extending on the left side of the spine from the nape of the neck to the inferior angle of the scapula. History of syphilis ; anæmic and feeble. Abscess opened antiseptically, 8oz. of pus evacuated ; tube withdrawn in 10 days ; wound healed soon afterwards. Another abscess formed at upper part of right thigh, it was opened antiseptically, and healed in a week. An abscess of the right calf, which had been opened without antiseptic precautions before admission, closed very slowly. Was under treatment for 86 days, and left hospital much improved in health.

b. *Scrotal abscesses. (a)*.—East Indian male, æt. 30. Hydrocele tapped 6 days before and iodine injected ; cellulitis and suppuration followed. Laid open antiseptically ; tunica explored, a little clear fluid escaped. A cellular slough was discharged through the incision which healed up soon thereafter. The scrotum regained its natural size. Detained in hospital 28 days.

(b). Chinaman, æt. 48. Suffered from fever and swelling of scrotum for four days ; tunica distended. It was tapped on two occasions, and turbid serum withdrawn. An abscess formed in the cellular tissue of the scrotum which was laid open antiseptically. This underwent rapid repair, the tunica regained its normal size, and the patient was discharged well in 35 days

c. Perinæal abscesses. (a).—Hindu male, æt. 30 ; 12 days' duration. Gonorrhœa 3 months ago. A free perinæal section was performed, and about 5 ounces of very foetid pus evacuated. No communication existed with the urethra. The wound healed in 18 days. A slight stricture of the urethra was gradually dilated.

(b). Hindu male, æt. 28 ; one month's duration following gonorrhœa, urethra strictured. Free perinæal section performed, and about half an ounce of pus evacuated. No escape of urine through wound now or subsequently. Wound healed kindly ; stricture gradually dilated. Discharged in 63 days.

(c.) Hindu male, æt. 38 ; 15 days' duration ; followed gonorrhœa of three months' standing ; urethra strictured ; free incision in middle line of perinæum, a small quantity of pus exhaling a urinous odour evacuated. Stricture gradually dilated. A few drops of urine used to come for a time through the wound during micturition. It finally closed, and patient left hospital in 34 days quite recovered.

(d.) *Abscess of tunica vaginalis.*—East Indian male, æt. 18 ; twenty days' duration ; formation accompanied with fever and shivering ; fluid detected in tunica which, on tapping, was found to be purulent ; free incision made. The cavity filled with granulation material and closed in 37 days.

e. Perihepatic abscess.—Hindu male, æt. 25 ; 23 days' duration ; fluctuating tumour in right hypochondrium. Liver dulness extended 3 inches below costal arch including fluctuating area. An incision was made under strict antiseptic precautions and two drainage tubes inserted ; pus characteristic of liver abscess evacuated ; one tube withdrawn in 15 and the other in 25 days. Wound healed shortly afterwards. Suffered from dysentery for a week. Remained 34 days in hospital.

f. Axillary abscess.—European male, æt. 44 ; 17 days' duration ; opened and drained antiseptically. Tube removed in 9 days. Discharged in 13 days.

g. *Abscess of arm*.—Native female, æt. 28. Abscess in infra spinous fossa of right side of 4 days' duration. Opened and drained antiseptically. Another abscess detected at the upper part of right arm 6 days afterwards, and similarly treated. Erysipelas of the shoulder and arm supervened on the last operation. This delayed the closing of the sinuses, which continued to suppurate freely as long as the erysipelas lasted. Satisfactory closing of both was obtained after 68 days' treatment.

h. *Multiple abscesses*.—(a.) Eurasian female, æt. 29. Had suffered before admission from 6 abscesses in the breast, axilla, and other places. After admission four additional abscesses formed; they were opened and drained antiseptically. Tonic treatment was adopted, and she was discharged in good health after 92 days' treatment.

(b.) East Indian male, æt. 31. Admitted with a large abscess of left thigh of 17 days' duration, which followed over-fatigue and formed with fever. An abscess at the back of the right thigh was subsequently detected, and then an abscess of the liver. They were opened and drained antiseptically on the 20th, 22nd and 26th June. The tubes were gradually shortened and finally withdrawn on 27th June (right thigh), 30th June (left thigh), and 17th July (liver). The wounds healed up soon after, and he was discharged on 21st July,—32 days after admission.

X. 1. *Division of cicatrix after burn*.—Hindu male, æt. 7. Sustained a burn of the right upper extremity 2½ years ago. This resulted in a triangular cicatricial web occupying the angle of the acutely flexed limb. The apex of the web was at the elbow joint, and its base measuring about 2½ inches, extended from the wrist to the shoulder. The arm was covered externally with a thick (keloid) cicatricial mass. This was dissected off; the web was split up to the bend of the elbow. A band of skin

was dissected off the inner and outer aspects of the limb above and below the joint and united by sutures in the middle line. The limb was straightened and secured in that position by a straight splint. The wound gradually cicatrized and patient was discharged after 74 days' detention in hospital with a useful limb.

2. *Hare-lip. a.*—Mahomedan female, æt. 7. Single, left side ; incisor gum protruding through cleft. This was removed by cutting forceps, a giant incisor extracted, and the alveolar edge rounded off. The edges of the cleft were then pared and brought accurately together by 6 horse-hair stitches. A button suture was employed to take the strain off these. The wound healed by first intention, and a good result was obtained after 9 days' treatment.

b. Hindu female, æt. 26. Single, left side, complete. A prominent incisor tooth was extracted, the edges of the fissure pared and brought together by 7 horse-hair stitches. The wound healed by first intention. Patient was convalescing from an operation for the removal of labial elephantiasis when this operation was performed.

3. *For Atresia oris. a.*—Hindu male, æt. 5. Had suffered from cancrum oris which caused necrosis of the jaw and loss of several teeth, and resulted in a firm cicatricial band on the inside of the right cheek which held the mouth firmly closed. This was divided, a necrosed molar tooth removed, a bit of necrosed alveolar process scraped away, and the mouth forced open by a Smith's gag. The gag was used every third day during the process of healing, and the patient left hospital in 36 days, able to separate his teeth to a sufficient extent.

b. Hindu male, æt. 12. Had suffered from malarious fever, enlarged spleen, and cancrum oris two years before admission. A firm cicatricial band resulted on the inside of the left cheek, holding the teeth firmly and permanently in contact. The same

treatment was adopted as in the last case. The wound healed in 39 days, and patient left hospital with power to separate his teeth to a serviceable extent.

4. *Plastic operation for restoration of lip.*

a.—Hindu male, æt. 30. Had suffered from a carbuncular boil of lower lip 4 years ago, 6 teeth and a corresponding length of gum exposed. A flap was taken from the chin and transplanted upwards. This served to supply the deficiency and conceal the teeth and gums. Remained 22 days in hospital.

b. Hindu female, æt. 13. Had suffered from sloughing parotitis two years before, which resulted in destruction of the whole of the left cheek, most of the lower lip, part of the upper and most of the nose. Several teeth of both jaws necrosed; mouth permanently closed by firm cicatricial bands extending between the left alveolar processes. The unsound teeth were extracted, cicatricial material dissected off, and the mouth forced open, flaps were taken from beneath the lower jaw and over the malar bone and zygoma to form a cheek and lips, and by a subsequent operation a new nose was formed partly from the forehead and partly from the right cheek. She was under treatment for 56 days, and left hospital with all the deficiencies in the face supplied and able to masticate her food.

5. *Circumcision.* a.—Hindu male, æt. 28. Paraphimosis with phagedenic sores. Constriction divided and prepuce, which was ulcerated, œdematous, and gangrenous, excised by scissors. Wound healed by granulation. Discharged in 24 days.

b. Burmese male, æt. 20. Preputial chancroid and phimosis, of one and-a-half month's duration. Prepuce removed; wound healed by granulation in 28 days.

c. European male, æt. 21. Preputial chancroid and phimosis of 2 months' duration. Prepuce removed by circular incision, mucous membrane divid-

ed to corona glandis by two lateral incisions ; edges of skin and mucous membrane brought together by horse-hair stitches. Parts healed in 29 days.

d. East Indian male, æt. 10. Congenital phimosis ; same operation. Discharged in 30 days. Result good.

e. European male, æt. 30. Phimosis ; same operation. Edges united by first intention. A small tumour was also successfully removed from the sole of the left foot. Detained 30 days in hospital.

f. Hindu male, æt. 20. Phimosis following gonorrhœa and balanitis. Excoriations round preputial orifice, penis much swollen. Same operation. Satisfactory result in 14 days.

6. *Plastic operation for laceration of scrotum.*—Hindu male æt. 25. His clothes were caught in an oil machine and the skin of the penis and scrotum completely torn off, just as if he had been subjected to an operation for scrotal tumour. No bleeding ; edges even ; testes hanging free over perinæum. Pockets were dug for them as in the operation for scrotal tumour, the testes were stitched together by catgut, and lateral flaps of skin drawn over them by continuous catgut suture. An excellent scrotum resulted ; the penis was gradually covered by cicatricial integument. Patient was discharged in 53 days.

XI. 1. *Nerve-stretching for sciatica.*—Patient, an East Indian male, æt. 52 ; had suffered for 2 years from sciatica which had come on after exposure to cold, and had been treated in vain up-country by a great variety of medicines and appliances. He suffered constant agony, and was quite bed-ridden, being unable to move his leg without great pain. The sciatic nerve was exposed as it emerges from under the edge of the gluteus maximus, and thoroughly stretched. The wound healed by first intention, and the pain in the course of the sciatic nerve disappeared. No paralysis resulted from the operation.

A tumour was subsequently detected above the great trochanter, which was judged to be a sarcoma. Patient would not consent to any operation for the removal of it, and left hospital greatly relieved after a stay of 48 days.

GENERAL REMARKS.

1. *Death-rate.*—The general death-rate 9·9 per cent. of cases treated to the end is more favourable than in any of the series previously published. The operations were not less severe than those of former years, and considering the class of patients treated, many of them presenting constitutions damaged by malaria, syphilis, unhealthy surroundings, and poor feeding, I am not sanguine that the rate can be reduced much lower.

2. *Death causes.*—These are shown in the foot note appended to the return which prefaces this paper, and fully explained in the narratives of individual cases. They may be exhibited thus:—

Shock	...	...	2
Tetanus	...	...	2
Septic poisoning	...	...	3
Primary gangrene	...	...	1
Gangrene of bowel	...	...	1
Obstruction of bowel	...	...	1
Secondary hæmorrhage	...	...	1
Phthisis	...	...	1

12

In one of the cases of primary shock (the case of knee-stretching) a comparatively trivial injury induced shock in a subject, of very feeble constitution. In the other case advanced age combined with severe injury, traumatic gangrene and a serious operation to establish the same condition. Both the cases of tetanus had undergone an operation for the removal of scrotal elephantiasis. The state of the wound was satisfactory in each instance, the disease supervened on the ninth day in both, and pursued an acute and rapid

course. In the cases of septic poisoning, the disease was associated with putrid wounds and presented a chronic type, being of slow development and associated with local inflammations of a low kind. The remaining causes do not give ground of general comment.

3. *Hospitalism and Antiseptics.*—The behaviour of wounds was satisfactory during the year under report, erysipelas almost unknown, and unhealthy inflammation rare. Extended experience induces me to attach greater importance to the element of constitutional depravity or impaired vital resistance, as largely determining both the occurrence and type of septic disturbance both of wounds and system. This consideration furnishes strong ground for the sedulous employment of antiseptics. The argument would take this form. If the strong and healthy are liable to be poisoned by material absorbed from putrid wounds, and require for safety the employment of measures competent to prevent putrefaction, how much more necessary are these in the case of the feeble and unhealthy, whose tissues become an easier prey to infection and systems succumb more readily to the toxic effects of septic poisons absorbed from putrid wounds.

I have accordingly spared no pains to prevent the occurrence of putrefaction in wounds. The only change which I have made in this respect has been greater caution in applying carbolic dressings direct to wounds, for in several cases I have observed unpleasant symptoms arise from absorption of carbolic acid through the wound and skin. I have therefore used boracic acid in the form of the boracic lint, and the ointment (Lister's) spread on thin gauze more largely as a direct application to wounds and sores, reserving carbolic gauze for use as an outer covering. As such it maintains a pure atmosphere in the vicinity of the wound, and maintains aseptic any discharges that may escape beyond the deeper layers of the dressings.



PRECIS OF OPERATIONS PERFORMED IN THE WARDS OF THE FIRST SUR- GEON, MEDICAL COLLEGE HOS- PITAL, DURING THE YEAR 1883.

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The following table and notes are in series with those published for the years 1879, 1880, 1881 and 1882, *Vide "Indian Medical Gazette ; Vol. XV, pp. 92, 123 ; Vol. XVI, pp. 123, 145 ; Vol. XVII, pp. 113, 143 and Vol. XVIII, pp. 141 171.)* The abstracts of cases have been condensed from detailed notes recorded by my House-Surgeon, Assistant-Surgeon AMRITA LALL DAS, L.M.S., who has performed this duty with much care and intelligence. I am also much indebted to this officer for valuable aid in the treatment of the cases, many of them requiring anxious watching and sedulous attention...

Description of Operations.	Number of operations.	Died.
<i>I.—Operations on the eye and its appen- dages.</i>		
1. Excision of the eye-ball ...	1	0

Description of Operations.	Number of operations.	Died.
<i>II.—Operations on joints.</i>		
1. Dislocation of shoulder joint reduced.	3	0
2. Extension of stiff knee-joints	2	0
3. Incision of knee-joint ...	1	0
Total ...	6	0
<i>III.—Operations on Bones.</i>		
1. Partial excision for necrosis (Sequestrotomy) ...	4	0
2. Gouging out of carious os calcis	1	0
3. Refracture of femur ..	1	0
Total ...	6	0
<i>IV.—Amputations.</i>		
<i>A—For Injury.</i>		
1. Primary of arm ...	1	0
2. ————— fingers ...	2	1 ¹
3. ————— leg ...	1	0
4. ————— toes ...	2	0
5. Secondary of shoulder joint for spreading traumatic gangrene ...	1	1 ²
6. ————— Arm for ditto ...	1	0
7. ————— leg ...	1	0

Description of Operations.	Number of operations.	Died.
B.— <i>For Disease.</i>		
8. For sarcoma—of the upper extremity and scapula ...	I	I ³
9. ————— of the lower extremity and bones of the pelvis ...	I	I ⁴
10 For cancer—above the ankle (Syme's) ...	I	I ⁵
11. For caries of the tarsus—above the ankle (Syme's) ...	I	0
12. For caries of the ankle—of the leg ...	I	0
13. For disorganization and ankylosis of the knee-joint—of the leg ...	2	0
14. For disorganization of the knee-joint—of the thigh ...	2	2 ⁶
15. For necrosis of the finger ...	I	0
Total ...	19	7
V.— <i>Removal of Tumours (By excision.)</i>		
A.— <i>Malignant.</i>		
1. Scirrhus of mamma ...	I	0
2. Epithelioma— <i>a.</i> of the cheek and jaw ...	I	I ⁷
<i>b.</i> of the lower lip	I	0
<i>c.</i> of the tongue ..	I	I ⁸

3 Shock. 4 Shock. 5 Tetanus. 6 Both asthenia.
7 Exhaustion. 8 Secondary hæmorrhage.

Description of Operations.	Number of operations.	Died.
2. Epithelioma— <i>d.</i> of the pharynx & larynx ... <i>e.</i> of the abdomi- nal wall ... <i>f.</i> of the buttock <i>g.</i> of the penis ...	I I I 4	I ⁹ O O O
3. Sarcoma— <i>a.</i> of the foot ... <i>b.</i> of the face ... <i>c.</i> of the neck ...	I I I	O I ¹⁰ O
<i>B.—Non-malignant.</i>		
4. Fibroma of face ...	I	O
5. Lymphangioma ...	I	O
6. Lymphadenoma of neck ...	I	I ¹¹
7. Angioma ...	I	I ¹²
8. Papilloma— <i>a.</i> of leg .. <i>b.</i> of penis and scrotum ...	I I	I ¹³ O
9. External and internal piles ...	3	O
10. Elephantiasis— <i>a.</i> of scrotum... <i>b.</i> of labia ...	24 2	6 ¹⁴ O
Total ...		49 13
<i>V.—Removal of Calculi.</i>		
1. Urethral by forceps ...	I	O
2. —————by incision ...	I	O
3. Vesical by lithotomy ...	2	I ¹⁵
4. —————by litholapaxy ...	I	I ¹⁶
Total ...		5 2

9 Secondary hæmorrhage. 10 Shock. 11 Chloroform asphyxia.
2—13 Pneumonia. 14 Three Tetanus and three Septicæmia.
15 Pneumonia ; 16 Septicæmia.

Description of Operations.	Number of operations.	Died.
<i>VI.—Removal of foreign bodies.</i>		
1. Œsophageal by probang ...	1	0
<i>VII.—Incisions.</i>		
1. Tracheotomy ...	1	1 ¹⁷
2. Abdominal section (Exploratory) ...	1	1 ¹⁸
3. For strangulated hernia— <i>a</i> with opening sac ...	5	3 ¹⁹
4. For radical cure of hernia ...	8	0
5. For fistula in ano ...	5	0
6. Perinæal section ...	8	2 ²⁰
7. Internal urethrotomy ...	1	0
8. For hæmatocele ...	5	2 ²¹
9. For imperforate anus ...	3	1 ²²
10. For bubo with removal of glands	4	0
11. For large abscesses ...	39	2
Total ...	80	12
<i>VIII.—Reparative Operations.</i>		
1. For atresia oris ...	2	0
2. For cleft palate (staphylo-raphy) ...	1	0
3. For hare-lip ...	1	0
4. For vesico-vaginal fistula ...	1	0
5. For taipes varus ...	1	0
6. For cicatrix after burn ...	1	0
7. For phimosis (circumcision) ...	3	0
Total ...	10	0

17 Diphtheria. 18 Exhaustion. 19 *a* Tetanus, *b* obstruction, *c* Peritonitis. 20 Both Septicæmia. 21 Both Septicæmia. 22 Exhaustion. 23 Both Septicæmia.

Description of Operations.	Number of operations	Died.
<i>IX.—Operations not classed.</i>		
1. Hydrocele tapped and injected.	1	0
2. Spina bifida tapped and injected	1	0
3. Cystic tumour of neck tapped	1	0
Total ...	3	0
Grand Total ...	180	34

I.—Excision of the eyeball for malignant disease.—Hindu male, æt. 55. Commenced in the eyeball 5 years ago; has attained the size of an orange; lids displaced and everted. Extirpation effected by scissors. Left hospital well in 25 days; no recurrence.

II.—Reduction of dislocation of the shoulder joint. a.—Hindu male, æt. 24. Subcoracoid; one month's duration; occurred during an epileptic fit. Reduced under chloroform by traction with the heel in the axilla. Operation followed by several epileptic fits. Left hospital in 10 days.

b.—Englishman, æt. 40, a jockey. Recent post-glenoid, caused by a fall. Reduction effected by traction with the heel in the axilla without chloroform. Suffered subsequently from neuralgia of the branches of the brachial plexus, and remained in hospital for 27 days.

c.—Mahomedan male, æt. 30. Recent sub-glenoid; caused by overreaching in attempting

to strike another man. Reduced by traction with the heel in the axilla. Left hospital the same day.

2. *Extension of stiff Knee-joints.* *a.*—Mahomedan male, æt. 35. Sustained a wound of the left knee-joint 9 months ago, followed by supuration in the joint, formation of sinuses and permanent stiffness in a semi-flexed position. Stretched forcibly under chloroform; several bands felt giving way; limb placed on a MacIntyre splint and ice applied. Joint swelled; strong fever supervened, lasting for two days. Lead and opium lotion applied, and a succession of blisters. Left hospital in 45 days, able to stand and walk without support, and to flex and extend the limb.

b.—Hindu male, æt. 29. Right knee-joint inflamed one year ago. Pus formed in the joint, which was laid open. Ankylosis in a semi-flexed attitude took place during the process of closure of the puncture; leg atrophied; patella movable; constitution feeble. Forcible extension was made under chloroform, followed by the use of a MacIntyre splint. The joint inflamed. Rest and counter irritants failed to reduce the inflammation, which proceeded to suppuration. The cavity became putrid and septic fever of severe type ensued. Under free opening and drainage this subsided and eventually ankylosis in a straight position was obtained. Remained 6 months under treatment.

[Extension was also resorted to in Cases IV. 14.*b*, and vii. II. *n.* ii and iv.]

3. *Incision of knee-joint.*—Eurasian male, æt. 21. Admitted with erysipelatous inflammation of the scrotum and glands of the right groins and

axilla following a wound of the left great toe. The right knee-joint was also painful and distended, and severe fever of a low type existed. The right tunica vaginalis was found on exploration to contain turbid serum, and was laid open and drained antiseptically. The knee-joint became more swollen, tense and painful, and constitutional symptoms more urgent. Two days after admission, the joint was tapped by a fine trochar and found to contain pus. An incision was made and drainage tube introduced under antiseptic precautions. His state at this time was extremely critical. Improvement soon followed the operation, and under antiseptic treatment both tunica and joint recovered; the erysipelas and constitutional disturbance quickly abating. The knee-joint remained somewhat stiff, and tender, and passive movement under chloroform was repeatedly resorted to. The glandular swellings underwent resolution. He left hospital in 98 days in good health, with slight stiffness of the joint.

[This was a case of very severe external pyæmia resulting in suppuration of the right tunica vaginalis and knee-joint. Free incision and subsequent drainage under strict antiseptic precautions were followed by marked and progressive improvement, eventuating in recovery.]

Incision of the knee-joint was also resorted to in Cases II. 2. *b.*, and IV. 14. *a* and *b.*

III. 1.—*Partial excision for necrosis-Sequestrotomy.*

a.—*Lower jaw.* i.—Hindu male, æt 30. Had a "gumboil" about a year and-a-half ago which burst. He was profusely salivated, and matter made its way out through an opening

opposite the angle of the jaw. On admission the right half of the lower jaw was found necrosed from symphysis to angle, the sequestrum was loose, and a new body had been formed. The dead piece was easily removed by manipulation. It was 4 inches long and $1\frac{1}{4}$ inch deep. The teeth had dropped out, and the alveolar sockets had been ground down by rubbing against the teeth of the upper jaw. The cavity soon filled up and the sinus closed. He was discharged 6 days after operation.

ii.—Hindu male, æt 30. Had a bad gumboil on the left side of the lower jaw a year ago; lost two molars. 20 days ago an opening was made externally, through which a piece of dead bone was extracted. On admission loose sequestra could be detected through the sinus. This was enlarged under chloroform and three pieces of dead bones were extracted. The mouth was subsequently opened by repeated use of Smith's gag. Got an attack of facial erysipelas there weeks after operation. On subsidence of this the cavity and sinus closed, and he was discharged after a stay of 30 days in hospital.

iii.—Hindu male, æt 20. Exfoliation of right ramus of lower jaw caused by a strumous abscess of the cheek, of 3 months' standing. Several sinuses existed on the right side of the face and neck. These were laid open and scraped. The sinus leading to the dead bone was also enlarged, a lot of gelatinous granulation material scraped out, some small exfoliations were removed, and the surface of the diseased bone well filed down by an osteotrite. Constitutional treatment was adopted. The sinuses healed soundly by granulation. The

mouth was opened by repeated use of Smith's gag. Remained 53 days in hospital.

b. Humerus.—Hindu male, æt. 25. Had an abscess of right arm 6 years ago, which has never closed. Numerous subcutaneous abscesses appeared on other parts of his body, which healed after discharge of matter. Movable dead bone detected through the sinus of arm. This was enlarged under chloroform and two sequestra removed—one two inches long. A drainage tube was inserted and the wound dressed antiseptically. The sinus healed soundly. He had an attack of dysentery during convalescence. Discharged in 45 days.

2. *Gouging out of carious os calcis.*—Hindu male, æt. 30. A nail entered above his right heel, and though it was extracted at once, inflammation and suppuration followed requiring three successive incisions—over the tendo Achillis, at the lower third of the leg, and on the sole. After a month it was discovered that the os calcis was carious. It was exposed by longitudinal incision and about $\frac{2}{3}$ of it gouged out. 171 days have elapsed (5th March) since the operation. The old sinuses still remain open, and a new gathering formed over the instep. The cavity of the operation wound has not closed. The ankle is swollen but the joint is movable. He has improved in health, but disease of the tarsus still exists, and amputation will probably be necessary.

3. *Refracture of the femur.*—Hindu male, æt. 30. Had sustained a fracture of the middle of the right femur 3 months ago. It was unskillfully treated, and united at a considerable angle. The limb was 3 inches shorter

than the other, and walking was accomplished with great difficulty and distress. He was put under chloroform and traction was made in opposite direction by means of three folded sheets, the central being placed over the seat of fracture and pulled towards the bend. The callus gave way, and by manipulation all deformity was corrected. He was kept for a month on a long splint, and after 37 days' stay in hospital was able to walk comfortably. One inch of shortening remained. He had no constitutional disturbance after the operation.

AMPUTATIONS. *A For Injury.*

IV. A. 1.—*Primary amputation of arm.*—Hindu male, æt. 15. Fell from a mango tree three days before admission. Sustained simple Colles's fracture of both radii, compound fracture of lower end of right humerus and olecranon process. Right forearm much swollen and infiltrated; gangrene evidently impending. Amputation by modified circular method—oval skin flaps and circular division of muscles—of lower third of arm, under antiseptic precautions. Had fever and swelling of right knee for 10 days. Some sloughing occurred in amputation wound which granulated and healed within a month. Fracture of left radius underwent satisfactory union. Remained in hospital for 44 days.

2.—*Primary of fingers. (a).*—Hindu male, æt. 35. Fingers of right hand crushed by a bone-crushing machine. Middle and ring fingers removed at metacarpo-phalangeal joint, index and little fingers at the base of the second phalanx. Operation followed by high fever and erysipelatous inflammation reaching as far as the axilla. This subsided and was followed by

dysentery, which resisted treatment, and caused death by exhaustion 25 days after the operation.

b. Spaniard, æt 42. Right middle and ring fingers smashed. They were amputated at the base of the second phalanx; wound healed by granulation. Had three attacks of hæmoptysis (he suffered from chronic phthisis) during convalescence. Discharged 45 days after operation.

3. *Primary of leg.*—Mahomedan male, æt 30; sustained a crush of left leg, smashing the bones and lacerating and bruising the soft parts. Occurred 18 hours before admission. Had suffered from shock and showed symptoms of febrile reaction. An attempt was made to save the limb by rest and antiseptics, but in two days the parts became gangrenous and constitutional disturbance serious. Amputation by the modified circular method was performed at the "seat of election." The flaps were infiltrated and the wound was left open; boracic dressings used. He suffered from fever and bronchitis for a fortnight. Part of the posterior flap sloughed. Eventually the cavity was filled with granulations and the skin edges drawn together by cicatrization. An excellent stump resulted. He was detained for 139 days in hospital.

4. *Primary of toes.*—*a.* Hindu male, æt. 35. Right great toe smashed and dorsum of foot lacerated by the fall of a heavy weight. Amputation performed at the metatarso-phalangeal joint. Wound healed by granulation in 32 days.

b. East Indian male, æt. 45. Four outer toes of left foot smashed by the fall of a piece of sheet iron, which almost detached them. Amputation

was performed at the metatarso-phalangeal joints and the wound allowed to heal by granulation as the flaps were short and bruised. Discharged with a sound and useful foot in 121 days.

5. *Secondary of shoulder-joint for spreading traumatic gangrene.*—Hindu female, æt. 32. Sustained a fall off a terrace four days before admission, resulting in compound fracture of both bones of the forearm; the whole arm had become gangrenous as high as the shoulder, and patient was in a very low state. Amputation was performed through the shoulder joint, as offering the only chance of recovery. Hæmorrhage was restrained by the use of an elastic cord. No reaction took place. Symptoms of tetanus appeared next morning and she died about midnight—39 hours after operation. The cut surfaces had been coated with lymph.

6. *Secondary of Arm.*—Mahomedan male, æt. 50. His left forearm had almost been bitten off by an alligator about 2 months before admission. The wound had got covered with granulation and large masses of callus had formed, but the part was riddled with sinuses and the tissues swollen by inflammatory infiltration. He had sub-acute trismus and slight fever. He was kept under observation for 6 days, and no prospect of recovery with a useful limb existing, amputation was performed through the elbow joint, a circular division of the soft tissue having been made 2 inches below it. The wound pursued an aseptic course, and he was discharged well in 39 days.

7. *Secondary of leg.*—Mahomedan male, æt. 45, left foot and ankle severely bruised by the

fall of bricks. Destructive inflammation ensued, resulting in disorganization of the ankle joint. Amputation was performed after a vain effort to save the limb, at the lower third of the leg by the modified circular plan. The wound healed by first intention, and he left hospital with a sound stump 40 days after operation.

B.—Amputations for disease.

8. *Amputation of the upper extremity and scapula for sarcoma.*—Hindu male, æt. 20 ; sustained a fracture of right humerus near the shoulder in infancy. The upper part of the arm began to swell painfully 3 months ago, and the tumour has grown very rapidly. It was punctured twice, but nothing issued except sanguineous fluid. It is a diffuse fluctuating swelling, occupying the upper half of the arm and measuring 27 inches in circumference. Patient emaciated and pallid ; suffering great distress and subject to fever. The tumour was removed by amputation of the upper extremity, including the scapula and outer half of the clavicle. He died of shock about an hour after completion of the operation. On post-mortem examination recent infarctions were found in both lungs. The tumour was a very soft diffuse sarcoma. Full details will be found in the January (1884) number of the *Indian Medical Gazette*.

9. *Amputation of the lower extremity and bones of the pelvis for sarcoma.*—Hindu male, æt 43 ; sustained an injury of left hip 3 months ago, which was followed by a swelling which has undergone rapid increase of size. Admitted with an immense fluctuating enlargement of left thigh, measuring 24 inches in circumference ; no pulsation. Patient emaciated

and suffering great distress from pain and fever. An exploratory incision was made which revealed a large ragged cavity containing blood and surrounding the bare and eroded shaft of the femur. Amputation was performed at the hip joint. The cortex of the hollow was found to consist of sarcoma. In order to extirpate it, it became necessary to remove by chisel, hammer, gouge and bone forceps the whole of the ischium and greater part of the ilium and pubis. Special precautions were taken to restrain hæmorrhage, and very little blood was lost. Patient died of shock 5 hours after completion of the operation. Secondary dissemination had taken place in the lungs, and the inguinal glands were diseased. The tumour was found to be a very soft sarcoma. The case has been fully detailed in the issue of the *Indian Medical Gazette* for January 1884.

[These two cases are very good illustrations of diffuse rapidly growing sarcoma in young subjects, hollowed out by hæmorrhage and degeneration into large cavities and simulating cyst or aneurism. These cases are very common in Bengal, and early secondary visceral deposit takes place, so that the propriety of operation is more than doubtful.]

10. *Amputation above the ankle (Syme's) for cancer.*—Hindu male, æt. 40. Admitted with epithelioma of right foot developed on the cicatrix of a burn sustained in childhood. Health bad; history of syphilis. Amputation at the ankle performed by Syme's method. The cavity of the wound inflamed and suppurated, and some sloughing took place. Repair set in in course of a week, and the case promised well until symp-

toms of tetanus set in on the 15th day. These symptoms gradually became more severe, and death took place from exhaustion 24 days after operation and 9 after appearance of tetanus.

11. *Amputation above the ankle (Syme's) for caries of the tarsus.*—Hindu male, æt. 30 ; sustained a sprain of left ankle 6 months before admission. Inflammation of the joint followed. Two incisions had been made by a medical man. He was kept under treatment for 3 months, during which rest, counter-irritation and constitutional treatment were thoroughly tried. Abscesses formed around the joint resulting in sinuses, and the joint became thoroughly disorganized, and the bones entering into its formation carious. Amputation was performed at the ankle according to Syme's plan. The amputation wound became the seat of unhealthy inflammation ; burrowing took place up the leg. Sinuses filled with gelatinous granulation material formed. The skin melted away, and the bones of the leg became bare and eroded. The patient had several attacks of diarrhoea and dysentery. After 7 months' patient effort to induce repair, an amputation higher up was considered necessary. The wound was kept aseptic throughout. Patient was found to be labouring under phthisis pulmonalis.

12. *Re-amputation of the leg for caries.*—The same subject. Amputation was performed at the middle of the leg by modified circular method under strict antiseptic precautions. The wound healed by first intention in 12 days. A fortnight later, after a smart attack of fever, a small abscess formed in the stump cavity, which discharged and healed. Patient subsequently, after the wound had completely and finally

healed, had a violent attack of dysentery, succeeded by phagædonic ulceration of the mouth. He eventually died of phthisis.

[This case is an admirable example of the difficulties with which surgery has to contend in a tuberculous subject.]

13. *Amputation of the leg for disorganization and ankylosis of knee-joint.*—*a.* Hindu male, æt 40. Had suffered for 10 or 12 years from articular rheumatism. Three months ago inflammation of right knee-joint occurred, which resulted in abscess. This was opened, but great destruction of tissue took place on the inner aspect of the knee and thigh. On admission his knee-joint was found to be perfectly stiff and acutely flexed; leg wasted and œdematous. A large unhealthy ulcer on the inner aspect of the thigh as far down as the head of the tibia. Hip-joint flexed and stiff. Amputation was performed below the knee-joint, which was ankylosed and obliterated. A circular incision was made and the flap dissected up; the tibia was divided quite close to the joint. No stitches were inserted. The operation was performed 4 days after admission, when the ulcer had taken on a healthy action. The flap was trained to cover the end of the bones and the ulcer. Nearly 9 months have now (6th March) elapsed since the operation was done. The ends of the bones have got covered, and the ulcer has nearly healed; the hip joint has been straightened and the patient's health greatly improved by tonics and generous diet. The wound remained sweet throughout. slight oozing took place for a few days. No constitutional disturbance of any consequence has occurred. Skin grafting has been resorted to

to accelerate cicatrization ; the dressings were changed every 2nd, 3rd, or 4th day according to need, and are now removed weekly. He is able to get about with crutches, but eventually the condyles of the femur will afford excellent support for the body on an artificial limb, while the attachments of the extensors and hamstrings remain. [An amputation higher up would have healed faster, but it would have involved greater risk to life and left a less useful stump.]

b. A native christian girl, æt 10. Inflammation of the knee-joint occurred owing to a fall in infancy, resulting in permanent flexion of the joint, dislocation backwards of the tibia and wasting of the leg. Three deep sinuses existed at the lower part of the thigh reaching the femur. Cavity of the joint filled up. Two oval flaps were taken from the sides of the leg, the tibia divided just below the joint and the flaps brought together so as to form a longitudinal wound. some constitutional disturbance followed the operation, and the cavity of the wound underwent suppurative inflammation. Healing finally took place by granulation, leaving a sound longitudinal cicatrix. Her constitutional state greatly improved under treatment, and she was able to walk with ease with the aid of a wooden leg. She remained in hospital for 123 days.

[In both these cases special measures were used in order to retain the condyles of the femur as a basis of support and with success.]

14. *Amputation of the thigh through the condyles (Carden's) for disorganized knee-joint.*—A Hindu male, æt. 40. History of syphilis and mercury; an attack of fever two months

ago succeeded by two abscesses of the right leg and right arm, which burst spontaneously. Both knees swelled, and the right leg became permanently flexed. General health bad. On exploring the right knee-joint it was found full of pus. It was laid open by incision and found to be carious. Carden's amputation was performed. A putrid sinus ran up the thigh. A counter opening was made at its upper end and a drainage tube inserted. No improvement followed the operation, and he sank of exhaustion, with pronounced symptoms of septic fever ending in prostration, two days after the operation.

b. Hindu male, æt. 40. Had suffered from inflammation of the left knee-joint for 2 years. Became more swollen and painful three weeks before admission; joint permanently flexed. It was straightened under chloroform, put on a Macintyre splint and treated by counter irritants locally, iodide of potassium being administered internally. Patient continued to suffer from fever and diarrhœa, which commenced before admission. On exploration $3\frac{1}{2}$ months after admission the joint was found to be full of pus. It was opened and drained antiseptically; a large abscess formed at the back of the leg, and the joint was found to be disorganized and carious. The limb was removed by Carden's method. The diarrhœa meantime turned into dysentery. The wound remained aseptic, but the posterior flap melted away and no attempt at repair took place. He rallied to some extent but eventually sank from wasting and prostration 34 days after the operation.

15. *Amputation of the right middle finger for necrosis.*—Englishman, æt. 38. Had sustained

a gun injury of the finger 10 months before admission. First inter-phalangeal joint disorganized and adjoining bones necrosed; finger amputated through metacarpo-phalangeal joint by oval method. Satisfactory result in 29 days.

[The death-rate among these amputations is very high, but in the fatal cases the operations were undertaken under exceedingly unpromising circumstances. In these it was thought right to resort to amputation as offering the only chance of recovery. The antiseptic method was strictly carried out in all cases, but under conditions such as I have detailed, the use of antiseptics cannot materially affect the issue.]

TUMOURS.

V. A. 1. Scirrhus of mamma and axillary glands.—Hindu female, æt 40. Scirrhus of right breast, commenced a year ago, became open a fortnight ago. Several hard enlarged glands in axilla. Breast extirpated and axilla thoroughly cleared out. Wound not stitched; dressed with boracic lint and carbolic gauze. Wound remained aseptic and filled up rapidly with granulation matter. No constitutional disturbance. Left hospital in 76 days with a linear cicatrix. No sign of recurrence.

2. a. Epithelioma of right cheek and jaws.—Hindu male, æt. 35. Admitted with a cancerous tumour of 3 months' duration, involving the right cheek and both upper and lower jaws. Appear to have commenced on the inside of the cheek. The whole cheek was removed, with upper and right half of lower jaw and the right parotid and sub-maxillary glands. Flaps brought from the neck and opposite side of the face. Suffered from shock succeeded by reaction

of an unsatisfactory kind (prostration with excitement). Died of exhaustion 6 days after the operation. The flaps retained their vitality, and there was no bleeding.

b. Epithelioma of the lower lip.—Eurasian male, æt. 55 ; $1\frac{1}{2}$ months' duration. Cancerous ulcer of left side of lower lip near angle ; sub-maxillary gland also enlarged and indurated, Growth removed by V-shaped incision. Gland dissected out. There was very free bleeding, and the facial artery required double ligation. Lip wound healed by first intention, the other inflamed, suppurated and healed by granulation Discharged in 29 days.

[Returned in 4 months with recurrence under the jaw ; lip sound. Left half of body of lower jaw removed, and all the soft tissue covering it, also sublingual gland removed. Plastic operation afterwards required to fill up the aperture. Made a good recovery.]

c. Epithelioma of the tongue.—Hindu male. æt. 40. Disease of $1\frac{1}{2}$ years' standing. Implicates the dorsum and right side of the tongue ; the right sub-maxillary gland enlarged and indurated, also some lymphatic glands under the sterno-mastoid. Tongue secured by a stout ligature passed through its apex. Incision made in the middle line from the symphysis to the hyoid bone. This was deepened and the mylohyoid aponeurosis divided. The genio-hyo glossi were detached from their tubercles, the mucous membrane and palato and stylo glossi divided by scissors. The base of the tongue was transfixed by an aneurism needle introduced through the wound, through which also the chain of an ecraseur was passed and carried behind

the needle. The organ was thus severed and removed through the mouth: no bleeding of consequence. The diseased sub-maxillary and lymphatic glands were subsequently removed by dissection. The facial artery had to be tied. Suffered from shock succeeded by reaction. The wound became sloughy and free secondary hæmorrhage occurred on the 6th day. The clots were removed and the bleeding point secured, but he died of exhaustion on the morning of the 7th day.

id. Epithelioma of the larynx and pharynx.—Hindu male, æt 40. Disease of 1 year's duration; hard vascular mammillated growth visible below right tonsil, folds of glottis felt thick, hard, irregular and indurated. Indurated swelling perceptible around and behind larynx on palpation. An enlarged hard lymphatic gland behind right sterno-mastoid. Loss of voice and considerable dyspnœa. Anæmic and wasted. Operation of extirpation of larynx performed; thyroid body found healthy and not removed. Pharynx extensively diseased. Isolated by dissection and removed by ecraseur. Diseased gland dissected out; wound left open. Suffered from shock, succeeded by smart reaction. Condition was improving and wound doing well, when on the morning of the 5th day secondary hæmorrhage occurred. It was stopped by pressure, but recurred violently in the afternoon and caused death. The bleeding was venous. No post-mortem was allowed. Had been nourished by enemata and liquids introduced into the œsophagus by means of a soft catheter. For full details of the case *vide Indian Medical Gazette* for December 1883, page 348.

e. Epithelioma of the abdominal wall.—Hindu male, æt. 50. The actual cautery had been applied in several places over the spleen in his youth for enlargement of that organ. The cancer commenced two years ago in the site of one of the cicatrices of these burns. It had attained the size of a full blown rose, diameter $3\frac{1}{2}$ inches. Deeply movable. Enlarged veins in the neighbourhood ; general health fair. Dissected out. Abdominal muscles removed layer by layer till the transversalis fascia was reached. A bit of the rectus and its sheath had also to be cut away. Healed by granulation in 99 days. Suffered from bronchitis and diarrhœa during convalescence. Skin grafting, both primary and secondary, failed owing to profuse discharge and the restlessness of the patient. No sign of recurrence.

f. Epithelioma of the buttock.—Hindu male æt. 21 ; commenced to grow from a wart two years ago, spread over the greater part of the right buttock ; diameter $6\frac{1}{2}$ inches. The mass was dissected off as in the preceding case. A circular incision was made through the skin well beyond the margin of the growth which was undermined from all sides, the incision being deepened according to the depth of the infiltration. Three indurated inguinal glands were also removed. The wound healed by granulation in 118 days. Grafting was twice tried without success. There was no sign of recurrence when the man left hospital.

g. Epithelioma of the penis.—i. Hindu male, æt. 50 ; disease of 4 months' growth ; had, gonorrhœa and bubo 3 years ago. Originated in the prepuce and involved only the skin which,

together with a portion of the glans, was removed by knife. The wound healed in 23 days, and there was no appearance of recurrence when he left hospital.

ii. Hindu male, æt. 40. History of syphilis 15 years ago. Had undergone circumcision 3 years before admission, and suffered from suppurating bubo on the right groin and a large abscess of left thigh. Present disease commenced one year ago at the glans, and anterior half of the body of the penis affected; enlarged and indurated glands in left groin. An oval skin incision was made well beyond the limit of disease, the corpus spongiosum separated from the corpora cavernosa and divided at a lower level. The edges of the fibrous cylinder of the latter were brought together by catgut stitches to stop bleeding. The wound was finally stitched and the extremity of the corpus spongiosum brought out at its lower angle. The diseased inguinal glands were removed by dissection, one of them extended into the saphenous opening. The wounds healed by granulation. He left hospital in 38 days with a patent urethra, and no symptom of return of the disease.

[This patient presented himself recently, about 7 months after the operation, with recurrence in both the penis and groin. Nothing further could be done for him.]

iii. Hindu male, æt. 50. History of syphilis and salivation 30 years ago. Present disease of 4 months' duration; glans and anterior third of penis implicated. Disease removed by transverse incision beyond its limit; urethra slit on under surface and stitched to skin;

wound left to granulate. It healed in 21 days, and there was no sign of recurrence at the time of patient's discharge from hospital.

iv. Hindu male, æt. 40. History of gonorrhœa 18 months ago. Present disease of 6 months' duration; involved the glans, and a small part of the adjacent body of the organ. Operation as in case ii. Wound healed in 27 days—result satisfactory. No sign of recurrence.

3. *a. Sarcoma of the sole of the foot.*—Irish woman, æt. 55. Tumour of 7 years' growth, removed 2 years ago, recurred in 2 months. Fungating movable. Removed by elliptical incision, portion of tendon of flexor longus pollicis, which seemed to be diseased, also taken away. Wound remained aseptic and healed by granulation in 64 days. Was able to walk with the aid of a stick when she left hospital.

b. Sarcoma of the face.—Mahomedan female, æt. 9. Admitted with a tumour of the size of an orange, of one month's growth, implicating the right side of the face, the ear and the parotid region. It was soft, very vascular, ill-defined, and not movable. General health bad. An exploratory incision was made and the tumour was found to implicate the parotid gland and mastoid process. It was cut and scraped away, bleeding points secured and chloride of zinc paste applied (equal parts of flour and chloride of zinc) to the surface of the wound to stop oozing and destroy the remains of the tumour. She died of primary shock on the afternoon of the day of operation.

c. Sarcoma of the neck.—Hindu male, æt. 40. Fluctuating swelling, of 3 months' duration, on left side of neck; skin tense, red and shining;

had been punctured and a quantity of sanious fluid let out ; lymphatic glands on both sides of the neck enlarged. Respiration and deglutition impeded. An incision was made under antiseptic precautions and a lot of curdy sanious matter evacuated ; a drainage tube was inserted. The cavity inflamed, and to relieve tension another incision was made. The base of the cavity meantime became broader and harder, and deep infiltration of the neck proceeded. As the tumour was obviously a soft sarcoma and beyond the reach of safe or thorough removal, no further step was taken, and patient was allowed to go home.

B.—Non-malignant tumours.

4. *Fibroma of face*.—Hindu male, æt. 40. Had a small lump in front of his right ear from boyhood ; began to increase rapidly after an attack of fever a year ago. Skin adherent and ulcerated in two or three spots, base movable. General health good. Removed by incision. Part of the parotid gland, which looked suspicious, also removed. Operation followed by facial paralysis. Wound healed by granulation in 74 days.

5. *Lymphangioma of arm*.—English child, 13 months old. A soft swelling of 6 months' growth on the inside of right arm, above the elbow, implicated skin and subcutaneous areolar tissue. Removed by elliptical incision. Tumour cavernous, cells filled with clear fluid. Wound healed by first intention in 10 days.

9. *Lymphadenoma of neck*.—Hindu male, æt. 36. Large multiple lymphatic tumours on right side of neck, observed 9 months ago ; recent increase rapid ; causing much pain by

pressure, and considerable difficulty in breathing and swallowing. Straight incision made in front of the sterno-mastoid and 13 glandular masses enucleated. Stopped breathing in the course of the operation. Breathing re-established by artificial respiration and operation completed. Did not recover consciousness, became asphyxiated, and had spasm of the glottis. Tracheotomy performed after forcible traction of the tongue by forceps, &c., failed to relieve the obstruction. Artificial respiration diligently carried out by direct method without avail. On post-mortem examination heart found dilated and fatty. All the signs of death by asphyxia present. No injury of pneumogastric or other important structure. Lungs congested. No blood in air tubes.

7. *Angioma (venous) of abdominal wall.*—Mahomedan male, æt. 35. Admitted with a small tumour over the xyphoid cartilage, of 5 years' duration, bleeding profusely through a small orifice—dilated veins coursing up to it from below; burst 6 days ago. It was laid open and a cavity was found, out of which venous blood gushed freely. Pressure below it restrained the flow, and a strong catgut thread was passed deeply through the abdominal wall on this aspect of the tumour, and tied over a roll of boracic gauze. This caused the welling to cease. A graduated compress of lint soaked in tinct. per. perchlorid. was placed on the tumour. He had a severe attack of fever the same day. Abdomen became tympanitic; right lung pneumonic. Symptoms of typhoid prostration ensued and he died 51 hours after operation.

No post-mortem examination was allowed.

8. *a. Papilloma of right leg.*—Hindu male, æt. 55. A warty growth of two years' duration, implicating the skin of the lower aspect of right leg lower third. It was removed antiseptically and a number of fragments of skin were grafted by means of a catgut thread on the exposed fascia. He had a severe attack of fever, with rigor, on the second day, followed by pneumonia of right lung, which ended fatally 5 days after the operation. The great majority of the grafts were found to have retained their vitality and become embedded in lymph.

b Papilloma of penis and scrotum.—Mahomedan male, æt. 28. Had a venereal sore on the penis about a year ago. Warts began to grow on the prepuce about 4 months back, and they gradually extended over the penis and scrotum, which were now thickly covered with vascular warty masses. Skin of scrotum considerably thickened. Glans concealed by a large buncy mass of preputial papillomata. Operation performed as for scrotal tumour. Parts covered with sound cicatrix in 58 days.

9. *External and Internal piles.*—*a.* Jew, æt. 30. Internal piles of uncertain duration; painful defæcation and prolapsus; no bleeding. Three tumours removed by clamp and cautery. Recovered in 9 days.

b. Hindu male, æt. 55. Internal piles of 5 years' standing; bled occasionally.—Removed by clamp and cautery. Good result in 11 days.

c. Hindu male, æt. 40. Complete fistula of 8 months and external piles of 2 years' duration. Fistula divided and piles removed by scissors. Recovered and left hospital in 12 days.

10. *a. Elephantiasis of scrotum.*—i. Mahomedan male, æt. 20. Tumour of 5 years' duration; history of periodical fever, orchitis and hydrocele, which was tapped and injected with iodine. Health good. Usual operation performed. Parts healed in 72 days—no constitutional disturbance. Tumour weighed 2lbs. 1 oz.

ii. Hindu male, æt. 30. Tumour involving both penis and scrotum, of $1\frac{1}{2}$ years' duration. History of syphilis and periodic fever. Scrotum covered with cicatrices. Usual operation. Slight fever for two days. Wound was pursuing an aseptic course when tetanus set in 5 days after operation, and proved fatal next day. Tumour weighed 2 lbs.

iii. Burmese male, æt. 25. Tumour involving both penis and scrotum, of 1 year's duration. History of syphilis and periodic fever. Usual operation. Wound healed kindly and without constitutional disturbance, but an attack of syphilitic psoriasis detained him in hospital for 91 days after operation. Weight of tumour 15 oz.

iv. Hindu male, æt. 25. Tumour involving both penis and scrotum, of 1 year's duration. History of syphilis, gonorrhœa and double suppurating bubo. Usual operation performed. Hydrocele on right side; testicle wanting on left. Got fever with rigor 4 days after operation, succeeded by sloughing of the wound and erysipelatous inflammation in its neighbourhood. This delayed recovery, and he remained 99 days in hospital. Tumour weighed 1 lb. 8 oz.

v. Hindu male, æt. 60. Tumour involving penis and scrotum, of 12 years' duration. History of periodic fever and hydrocele. Subject

to right inguinal hernia. Usual operation performed. Oblique incision made over right cord. Sac of hernia dissected out and removed after tying the neck, pillars brought together by catgut. Fever with rigor set in on the evening of the day of operation and continued to increase daily. Sloughing cellulitis attacked the wound and spread into the right abdominal wall requiring free incision. Prostration ensued and he died of septicæmia 7 days after operation. No sign of peritonitis on post-mortem examination. Wound gangrenous; the gangrene had extended along both cords. Large fibrinous clots in right cavities, smaller in left. Tumour weighed 3 lbs. 6 ozs.

vi. Hindu male, æt. 30. Tumour of penis and scrotum, of two years' growth. History of periodic fever. Health good. Usual operation. Hydrocele on right side. Left testis atrophied. Complete and satisfactory recovery in 91 days. Tumour weighed 1 lb.

vii. Hindu male, æt. 45. Tumour of penis and scrotum, of 5 years' duration. History of periodic fever. Surface of scrotum exudes fluid. Operation as usual. Double hydrocele. Wound remained aseptic and healed completely in 91 days. Tumour weighed 1 lb. 6 oz.

viii. Armenian male, æt. 42. Tumour implicating both penis and scrotum, of five years' duration. History of periodic fever, hydrocele, syphilis, gonorrhœa and bubo; parts inflamed on admission; treated for some time with lead locally and iodide of potassium internally. Usual operation performed. Had smart reactive fever, which subsided. Was doing well, when tetanus set in 10 days after operation and proved fatal in 6 days. Tumour weighed 1 lb. 8 oz.

ix. Hindu male, æt 40. Tumour of both penis and scrotum, of 3 years' duration. History of periodic fever. Scrotum covered with vesicles containing lymph. Usual operation; hæmatocele on right and hydrocele on left side. Slight reactive fever. Recovered in 65 days. Tumour weighed 3 lbs. 10z.

x. Hindu male, æt. 40. Case of elephantiasis of scrotum only. Slough on the fundus of it; hydrocele on left side; recent venereal sore and bubo. General health bad. The diseased parts were removed by an elliptical incision at the root of the scrotum. The penis was not decorticated; hydrocele emptied and redundant tunica removed; right tunica adherent. Pockets made for testes and side flaps drawn over them in the usual manner. Operation succeeded by strong fever, which did not subside. Penis swelled and became gangrenous; wound got sloughy. An unhealthy abscess formed in the abdominal wall. Type of fever became low. Died of septic blood poisoning in 11 days. Tumour weighed 10 oz.

xi. Mahomedan male, æt. 50. Tumour involved both penis and scrotum, of one year's duration. History of syphilis and gonorrhæa in early life, and periodic fever accompanying growth of the tumour. Vesicles on scrotum. Usual operation. Slight reactive fever after it. Wound remained aseptic and healed in 61 days. Tumour weighed 1 lb. 4 oz.

xii. Hindu male, æt. 27. Admitted with hernia testis of left side, consequent on abscess of the tunica vaginalis and sloughing of the scrotum. Had destructive venereal sores on penis, which caused loss of most of its integu-

ment. Suffered also from gonorrhœa which was succeeded by an abscess at the root of the penis, which bursting gave rise to a permanent fistula. Scrotal skin much thickened and covered with cicatrices. Scrotal integument removed by elliptical incisions at its neck ; testes dissected out ; substance of left herniated through a hole in the tunica albuginea which was freely notched ; testes stitched in pockets in the usual way ; part of the thickened skin of the penis also removed. Wound healed kindly in 34 days. The fistula remained patent. Tumour weighed 8 ounces.

xiii. Hindu male, æt. 33. Scrotal tumour of three years' and right oblique inguinal hernia of 4 years' duration. The herniagot strangulated three years ago, and an operation was performed by Dr. Partridge for its radical cure (probably Wood's). It descended a month after he left hospital. A truss does not prevent descent. History of periodical fever. Scrotum removed by elliptical incisions meeting at the root of the penis, and perinæum and sac dissected out ; cord spread out over its posterior surface. After ligaturing the neck of the sac and amputating its body, the loop slipped and several coils of small intestines protruded. These were returned, the edges of the peritoneal opening were caught by artery forceps and the neck of the sac thus secured was transfixed, and securely ligatured a second time. The pillars were brought together with catgut. The right testis was now examined with care, and as the cord was very long and scattered, and no pulsation was felt in the spermatic artery, castration was resorted to. The remaining testis were then stitched as

usual in the pockets which had been prepared for them. The whole proceeding was conducted under strict antiseptic precautions. Patient was very restless after the operation, and the abdomen became tympanitic ; this subsided on the third day after a purgative. The wound remained sweet and was undergoing satisfactory repair when, on the 7th day of operation, tetanus set in and proved fatal in 18 hours.

The tumour weighed 6lbs. 14 oz. A post-mortem examination was not permitted.

xiv. Hindu male, æt. 30. Admitted with putrid hæmatocele of left side, hydrocele on right, and severe inflammatory swelling of scrotum. Suffered from high fever of remittent type and was very low. Hæmatocele freely laid open and emptied. Much oozing from divided tunica, which was enormously thickened. This was stopped by passing a continuous catgut suture through the membrane about half an inch from the edge. Counter-openings had to be made to liberate pus which formed in the cellular tissue of the scrotum. The lining membrane of the sac came away as an entire bladder like sac. The wound eventually granulated and filled up, the fever subsided, and his constitutional state greatly improved. One month after the first operation, a second was performed for the purpose of removing the hypertrophied scrotum. This was accomplished by elliptical incisions as in case xiii. The right tunica was laid open and emptied of the clear fluid which it contained. The redundant portion of it was excised.

The remains of the thickened left tunica were also pared off. The testes were then stitched in perinæal pockets as usual. A consider-

able amount of blood was lost. The operation was followed by high fever, which did not subside. The wound became sloughy and the neighbouring skin gangrenous. The gangrene spread, patient became low and delirious and died of prostration 6 days after the last operation. The tumour weighed 13½ oz.

xv. Eurasian male, æt, 28. Hypertrophy of penis and scrotum, of 12 years' duration, commenced after an attack of dengue fever. Suffered from fever at irregular intervals. Hydrocele of right side, tapped 10 days before admission. An abscess formed on the right side of the scrotum, which was laid open. Penis decorticated and scrotum removed in the usual way. Hæmatocele of right side; slight attack of reactive fever.

Wound remained sweet and was healing satisfactorily when he got an attack of tetanus 47 days after operation. This developed into a severe and critical illness, from which he recovered. Discharged well in 89 days. Tumour weighed 1 lb 2 oz.

xvi. Hindu male, æt. 35. Hypertrophy of penis and scrotum, of 3 years' duration. History of fever; venereal sores 3 years ago. Usual operation. Slight hydrocele on right side. Left tunica adherent. No fever after operation. Recovered in 59 days. Tumour weighed 6 lbs. 8 oz.

xxii. Mahomedan male, æt 30. Tumour implicating penis and scrotum, of 1½ years' duration. Gonorrhœa and bubo 10 years ago. Subject to occasional attacks of fever. Skin of scrotum scaly, occasionally exuding watery fluid. Usual operation. Double hydrocele. Slight reactive fever. Recovered in 56 days. Tumour weighed 10 oz.

xviii. Hindu male, æt. 38. Sustained an injury of the scrotum in boyhood, and since then has had an oblique hernia of the right side and considerable enlargement of the testes and their coverings. Has suffered much from fever off and on. One and-a-half years ago the right scrotum burst, and has been discharging dark offensive matter ever since. Scrotum removed in the usual way; penis not decorticated. Hæmatocele on right side laid open, tunica pared and scraped down. Incision made over right cord; sac dissected out tied and amputated. Suffered from strong fever for a week. Wound became sloughy; the sloughs separated and healthy granulations formed. Absconded in 55 days with the wound quite superficial and nearly healed; no descent of hernia. Tumour weighed 2 lbs. 4 oz. The case is detailed at greater length in the *Indian Medical Gazette* for December last.

xiv. Hindu male, æt. 35. Hypertrophy of penis and scrotum, of 5 years' duration. History of periodic fever and hydrocele. Usual operation. Very large hydrocele on right side, smaller on left. Slight re-active fever. Good result in 80 days. Tumour weighed 4 lbs. 6 oz.

xx. Hindu male, æt. 35. Tumour of scrotum, of 4 years' duration. History of fever and double hydrocele; inguinal glands enlarged. Scrotum amputated. Double abscess of scrotum and tunica found, tunica pared down and operation completed as usual. Suffered from fever for a week. Made a good recovery in 61 days. Tumour weighed 1lb. 7 oz.

xxi. Native Christian male, æt. 50. Tumour involves both penis and scrotum; had venereal sore and suppurating bubo 25 years ago. His-

tory of fever. Usual operation ; healed in 81 days. Tumour weighed 11b 12 oz.

xxii. Native Christian male, æt. 45. The scrotum was amputated for elephantiasis by Dr. Gayer 7 years ago. The prepuce has now got enlarged. This was removed by dissection and the wound allowed to heal by granulation, which took place in 25 days.

xxii. Hindo male, æt 50. Tumour of penis and scrotum, of 2 years' duration. History of venereal sore, suppurating bubo and gonorrhœa, also of occasional fever. Skin of scrotum covered with vesicles discharging clear fluid. Usual operation. Satisfactory result in 75 days. Tumour weighed 1 lb. 6. oz.

xxiv. Hindu male, æt. 55. Tumour involving both penis and scrotum, of 10 months' duration. History of gonorrhœa and mercury and occasional fever. Usual operation. Large hæmatocele on right side. The cord of this side swelled greatly after operation. This subsided very gradually by absorption. He is still in hospital (72 days since operation) but very nearly recovered. Tumour weighed 4lbs.

[The operation in these cases was performed after the plan described in last year's report. In some cases a transverse incision was made into the groin opposite the base of the penis on each side. This facilitated the adjustment of the flaps and left the root of the penis free. The dressings used consisted of a layer of boracic gauze (thin muslin spread with boracic ointment) next the wound ; a layer of borated lint outside of that, several pieces of carbolic gauze outside of that, a large piece of oiled paper to cover the whole and a bandage to keep

them in position. They were generally changed every day for the first fortnight, then every second or third day according to the amount of discharge; the spray was used during operation or change of dressing. In the great majority of cases,—when not otherwise stated—the wound remained aseptic and did not suppurate. This is a great comfort to the patient and dresser. It contributes also to the salubrity of the ward. Great care was taken to keep the penis isolated and prevent its retraction during cicatrization. When it was necessary adhesions at its root were freely disrupted or divided by finger or scissors. This process of maintaining the isolation of the penis greatly retards final recovery, but it procures a much more natural and useful state of parts. The scrotal wound, in aseptic cases, generally heals in a fortnight or three weeks; the rest of the time is consumed in cicatrization of the penis. In six cases (Nos. x, xii, xiii, xviii, xix, xx,) the scrotum only was removed, the penis being left untouched. In one case (No. xxii) the skin of the penis only was removed. It was a case of recurrence after a former amputation of the scrotum only. In many cases the tumour was complicated with hydrocele, and in a few with hæmatocele. The lightest tumour weighed 8 oz. and the heaviest 6 lbs. 8 oz., the average being 2 lbs. 2½ oz. The mean period of detention in hospital was (excluding fatal cases) 69 days. The three cases which were complicated with hernia will be subsequently referred to. The death-rate was high—25 per cent. In three cases the cause was tetanus, and in three septic poisoning, associated with putrefaction and gangrene.]

b. Elephantiasis of the labia.—i. Mahomedan female, æt. 28. Tumour implicating both labia majora, of 2 years' duration. History of venereal sores and suppurating bubo. Base of tumour transfixed by a needle and tied tightly with, stout silk ; mass dissected off. Slight reactive fever. Wound healed by granulation in 40 days. Tumour weighed 3 lbs. 4½ oz.

ii. Hindu female, æt. 24. Hypertrophy of both labia minora, of 4 years' duration, following venereal sores. Base of nymphæ secured by Smith's clamp ; tumours removed and stump cauterized with a red hot iron. Recovered in 19 days.

REMOVAL OF CALCULI.

1. *Removal of urethral calculus by forceps*—Hindu male, æt. 36. Suffering from difficulty in making water for 8 days. Stone detected in urethra, impacted about 5 inches from the orifice ; removed by long forceps. Patient left hospital the same day.

2. *Removal of urethral calculus by incision.*—Hindu male, æt 45. Suffered from pain and difficulty in passing water for 15 days. Stone detected in urethra far back. After a vain attempt to remove it by forceps, perinæal section was performed, and a stone, the size of a coffee bean, extracted. Recovered in 17 days. Full sized catheter passed occasionally to maintain patency of canal.

3. *Lithotomy.*—a Hindu male, æt 45. Symptoms of one year's duration. Large stone detected in prostatic part of urethra ; removed by perinæal section. A second stone found on exploring the bladder. Wound enlarged, prostate nicked and stone removed by forceps. Operation

followed by no constitutional disturbance; began to make water through penis 13 days after operation. Perinæal wound had almost closed in 45 days, when he got severe rigor and fever, followed by double pneumonia which proved fatal in 5 days. Stones uric; weighed 1 oz., 6 drs. 10 grs.

b. Hindu male, æt. 50. Symptoms of two years' duration. Lithotrite introduced and stone found too large. Bilateral lithotomy performed and a calculus weighing 7 oz. and 3 drs. extracted with great difficulty. Operation succeeded by rigor and fever. He became low and delirious; had hiccough and tenderness over the hypogastrium. Tongue dry, fissured and coated. He was removed in a moribund state by his relations 11 days after the operation.

4. *Litholapaxy*.—Mahomedan male, æt. 55. Symptoms of one year's duration. General health feeble. Litholapaxy performed by Dr. R. C. Sanders. Lithotrite introduced thrice and evacuator 4 times. Operation lasted 30 minutes; followed by strong rigor and fever and pain over bladder, urine ropy, fœtid and ammoniacal. Diarrhœa and prostration ensued. Scrotum and penis became gangrenous before death, which happened 22 days after operation. On *post-mortem* examination the dura mater and surface of the brain were found to be congested. Upper lobe of right lung much congested and contained a large cavity; decolorized clots in right auricle and left ventricle, pyæmic abscesses in both kidneys. Peritoneum over bladder congested. Bladder hypertrophied and contracted; mucous membrane inflamed and covered with spots of ecchymosis. A piece of phosphatic calculus, size

of a horse bean, found in it and some minute phosphatic grit ; two ragged cavities in base of bladder ; urethra lacerated and gangrenous ; gangrene extended over Poupart's ligament on right side. Patches of congestion throughout small intestine.

VI. Removal of foreign body from œsophagus by probang.—Hindu male child, æt. two years, Two days before admission attempted to swallow a guava fruit which he had partially masticated. It stuck in his gullet. He had vomited fragments of it, but was unable to swallow. Water taken into the œsophagus was immediately rejected. A whalebone sponge probang well oiled was passed and the foreign body dislodged and pushed into the stomach. He was now able to swallow and retain food and water. Left hospital next day apparently quite well.

INCISIONS.

VII. 1. Tracheotomy for diphtheria.—Eurasian child, æt $2\frac{1}{2}$ years ; disease of 5 days, duration ; difficulty of breathing extreme. Trachæa opened below the isthmus of the thyroid and tube inserted. Breathing relieved, but patient died of exhaustion in sixteen hours.

[Tracheotomy was also performed in case V. 6. supra.]

2. Exploratory Laparotomy.—Mahomedan male, æt. 40. Admitted with a large abdominal aneurism of uncertain duration, occupying the left side of the abdomen from the umbilicus to the erector spinæ, and from the ribs to the crest of the ileum. It was undergoing rapid enlargement and causing great distress. The abdomen was opened with antiseptic precautions under the impression that it

might have originated from dilatation of the left renal or the inferior mesenteric artery, and a ligature might be placed between the aorta and the cavity of the aneurism. On exploration by the hand it was found to spring from the abdominal aorta by a wide opening on each side of which existed a large atheromatous plate. Large dilated arteries, branches of the inferior mesenteric coursed over the anterior aspect of the tumour. The wound was carefully closed and dressed antiseptically. He died of exhaustion 56 hours after the operation. No sign of peritonitis was found on post-mortem examination, and the lips of the wound were glued together with lymph. The aneurism had grown from the left side of the abdominal aorta, and was filled with clot. The aorta was dilated and atheromatous throughout. Orifice of aneurism admitted three fingers. Last dorsal and two first lumbar vertebræ eroded. Lower lobe of right lung congested. Left kidney fatty.

3. *Herniotomy*.—*a*. Hindu male, æt. 40. Admitted with strangulated right inguinal hernia. Was subject to a permanent swelling in right groin, which had become suddenly larger, with pain, on the morning of day of admission when he was returning from bathing in a tank. Taxis applied and tumour reduced in size. Some material remained in the sac, apparently solid. Bowels opened by enema; vomited thrice between 10 P.M. and 4 A.M. Abdomen tympanitic, pulse excited. Reduction being incomplete and symptoms of obstruction existing, operation was resorted to. An oblique incision made over right cord. Sac exposed and, reduction being still impossible, opened. It contained an empty

knuckle of small intestine and some omentum and mesentery. Intestine much congested and ecchymosed. Stricture in neck of sac. This was divided and the contents returned. The slit in the neck of the sac was stitched, the neck tied, and the rest of it dissected out and amputated. Boundaries of canal brought together by catgut ligature and external wound sutured. Operation performed under strict antiseptic precautions and wound dressed with boracic lint and carbolic gauze. Tympanitis gradually subsided. Wound remained aseptic and healed by first intention, except where drain emerged. Had fever on 3rd, 4th and 5th days; subsided under salines. Again on 8th day. Bowels became regular; some tendency to looseness. Symptoms of tetanus appeared 9 days after operation. The disease quickly assumed a severe form and proved fatal on next day—10 days after operation. Omental adhesions were found opposite the external wound. A coil of small intestine was also adherent in this position, its wall softened and about to give way. No general peritonitis. Left lung in state of red hepatization throughout.

b. Mahomedan male, æt. 60. Oblique right inguinal hernia, of one month's duration; came down 13 hours before admission, and could not be reduced. Abdomen tympanitic; hiccough but no vomiting. No stools since descent. Pulse small, feeble, excited; tumour dull, no impulse. Taxis after ice failing, herniotomy was performed 18 hours after descent. Sac opened, contained 2 oz. of dark offensive fluid; a coil of small intestine $4\frac{1}{2}$ inches long and some mesentery; stricture in neck of sac. Omentum reduced.

Bowel soft, gave way under manipulation. The gangrenous bowel was excised, and the orifices stitched together and to the neck of the sac by continuous catgut suture for artificial anus. No fæces came for 2 days. Rectal bougies were passed through the proximal orifice and a few ounces of fæculent material followed. Became low and had stercoraceous vomiting. Died of obstruction and prostration 4 days after operation. On post-mortem examination, the ends of the bowel were found united together and to the neck of the sac by lymph; no fæculent material in peritoneal cavity; acute peritonitis; small intestine distended, congested and adherent; fibrinous coagulæ in the cavities of the heart.

c. Mahomedan male, æt. 55. Right oblique, inguinal hernia, of 5 years' duration; 6 days down. Tumour hard, dull, tender, without impulse; abdomen tympanitic; countenance anxious; pulse small, feeble and frequent; stercoraceous vomiting; bowels obstructed. Sac exposed and opened; contained 10 ounces of sanguineous serum and 3 inches of deeply congested small intestine. An enlarged mesenteric gland impeded reduction; stricture in neck of sac freely divided. Sac dissected out, ligatured at neck, stump reduced; pillars brought together and wound sutured. Counter-opening made in scrotum and drainage tube inserted. No sign of improvement followed the operation, except that several loose stools were passed. Vomiting continued and the abdomen remained puffed and tender. Sank exhausted 4 days after operation. Post-mortem examination not permitted.

d. Mahomedan male, æt. 60. Double scrotal hernia, of 20 years' duration. Both descended

6 days ago and could not be reduced. Bowels had not acted since descent; vomiting stercoraceous material; hiccough setting in; abdomen tympanitic. Temp. 97.2° , pulse small and frequent. Right hernia hard, tender, without impulse; left loose. Labouring under double hydrocele. The hydrocele of the right side was tapped and emptied. Sac exposed and opened; contained a large quantity of sanguineous serum and 4 inches of congested and inflamed small intestine; stricture outside of sac freely divided. The intestine was denuded of lymph and returned. A finger was passed into the opposite sac and traction from within combined with taxis failed to empty the sac. The left hydrocele was also tapped and emptied. The right sac was next dissected out, tied at the neck and the stump reduced. The pillars were brought together with catgut and the wound stitched. A counter-opening was made in the scrotum and a drainage tube inserted. The operation was followed by high fever, sloughing cellulitis in the neighbourhood of the wound, and symptoms of peritonitis. These symptoms subsided in 14 days, and the wound became clean and began to granulate. The other rupture was returned by taxis 17 days after operation. A few days after a collection of matter was found in the scrotum and freely laid open. The wound healed and the patient was discharged 49 days after operation with a double truss. The canal on the right side seemed to be obliterated, and no sign of reproduction of hernia existed when he left hospital. The left hernia was fully commanded by the truss. Full details of this important case will be found in the *Indian Medical Gazette* for February 1884.

e. Hindu male, æt. 60. Left oblique inguinal hernia, of 15 years' duration; down 15 hours. Bowels obstructed; vomited 4 times; abdomen tympanitic; pulse not much disturbed; tongue moist. Taxis with ice and chloroform failing, the sac was exposed, stricture outside of neck divided, and contents relieved; something remained in the sac and it was opened. This was found to be omentum, which was adherent to the inside of the neck and to the herniated bowel, whose coils were also adherent. Adhesions were separated by knife and finger; several vessels requiring ligature. The sac was next dissected out, tied at the neck and amputated, and the operation completed in the usual way. Operation followed by slight reactive fever. Wound remained aseptic and healed mostly by first intention. Patient left hospital after 26 days with a fine linear cicatrix in left groin, and no apparent tendency to recurrence. Canal firmly closed. The case has been recorded in greater detail in the issue of the *Indian Medical Gazette* for February 1884.

4. *Operations for the radical cure of hernia.*—

a. Mahomedan male, æt. 28. Oblique right inguinal hernia, of one year's duration; not entirely reducible; no strangulation; health good; subject to bronchitis. Sac exposed and opened; omental adhesions within sac. These were divided and the omentum returned. The operation was then completed in the usual manner. Slight fever and swelling of scrotum for a few days. Suffered also from an attack of diarrhœa about the third week. Wound completely healed and patient discharged in 60 days. Linear cicatrix in groin; canal closed;

no impulse or tendency to recurrence. Recommended to wear a truss.

b. Jew, æt. 28. Right oblique inguinal hernia, of 3 years' duration, not commanded by a truss. Usual operation performed. Omentum found adherent to the neck of the sac, tied and divided and reduced. Fevered after operation. Abdomen swelled painfully ; scrotum became œdematous. Wound healed by first intention, but became putrid and inflamed ; suppurated and gaped. It then healed slowly by granulation ; had a slight attack of diarrhœa for a week 17 days after operation. Discharged in 55 days with wound soundly healed and canal closed.

c. Englishman, æt. 18, a sailor. Right oblique inguinal hernia, of 5 months' duration. Had been down for 12 hours ; was reduced by taxis after the application of ice. Usual operation performed. Had fever and bronchitis for a week after. Scrotum swelled and suppuration took place in the cavity, out of which the sac had been dissected. Wound healed by granulation. Discharged in 20 days ; result satisfactory.

d. Englishman, æt. 23. Right oblique inguinal hernia, of 10 months' duration. Usual operation performed. Had fever for 10 days, wound inflamed and suppurated, and healed by granulation. Discharged in 40 days with a sound cicatrix and closed canal ; no sign of recurrence.

e. Hindu male, æt. 45. Right oblique inguinal hernia, of two months' duration. Usual operation performed ; slight reactive fever. Wound remained aseptic and healed mostly by first intention. Discharged in 37 days ; result very satisfactory.

f. Bhootea, male, æt. 24. Right oblique inguinal hernia, of 16 years' standing. Usual operation performed, opening made in scrotum and tube inserted, no constitutional disturbance. Wound healed in 12 days. Discharged in 36 days; linear cicatrix; canal closed; no impulse. Provided with a truss.

g. Mahomedan male, æt. 25. Right oblique inguinal hernia, of 3 years' duration. Painful and irreducible on admission. Ice applied and tumour reduced by taxis. Suffered from fever and abdominal pain for 25 days. The usual operation for radical cure was then performed; Wound healed by first intention in 10 days, symptoms of tetanus appeared 11 days after operation: was removed against advice and remonstrance by his friends three days afterwards with the disease fully developed.

h. Mahomedan male, æt. 35. Right oblique inguinal hernia, of one year's duration. Rupture irreducible for an hour before admission; symptoms of strangulation; reduced by taxis after application of ice. Usual operation for radical cure performed 4 days after. Wound healed by first intention. Discharged in 29 days. Result very satisfactory.

[There are 16 cases included in these abstracts in which an operation was performed for the cure of hernia. In three of the cases (V. 10 *a.* v. xiii and xviii) the hernia existed in conjunction with elephantiasis of the scrotum. In one of them the case was further complicated by the existence of a large open hæomatcele. In these cases the operation for the cure of the hernia was combined with ablation of the elephantiasis; in one instance both penis and scrotum

were decorticated; in the other two the scrotum only was removed—the skin of the penis being healthy. The additional step of dissecting out the sac, tying it at the neck, cutting the rest off and approximating the pillars can be carried out with great ease; a prolongation of the incision along the cord being all that is requisite. One of these cases (v.) was a complete failure. The wound became putrid and gangrenous cellulitis set in; severe septic fever ensued and death resulted. Another case was a complete success (xviii), notwithstanding that a putrid hæmatocele had to be dealt with. The third case (xiii) occupies an intermediate position; The wound was aseptic and doing well when tetanus attacked and carried off the patient. It will be observed that castration was found necessary in this case. As a matter of experience I have found that the operation of castration is very frequently followed by tetanus. There can be no doubt that the combination of these two operations—ablation of scrotal tumour and extirpation of a hernial sac—is a serious procedure; but in these cases a truss is of very little service and strangulation a more probable contingency than in simple hernia. In five of the cases operation had to be resorted to for the relief of strangulation. In all the sac was opened. In four of these the sac was tied and amputated. Two of them (*a.*, *c.*) died, one of tetanus and one of peritonitis. Two (*d.*, *e.*) recovered under very unpromising circumstances, &c. In the fifth case the gut was found gangrenous and steps had to be taken to establish an artificial anus. These were unsuccessful in consequence of peritonitis and paralysis of the intestines.

The experience furnished by these four cases is in favor of resorting to the further measure of extirpating the sac when operation is required for the relief of strangulation, more especially if the sac has to be opened. Eight operations were performed for the radical cure of rupture, according to the plan described in previous reports. The only changes of procedure which additional experience has taught are these,—(1) opening into the sac at once no danger arises from so doing if antiseptic precautions are followed, and it greatly facilitates dissecting out the sac and saves handling and tearing of the fasciæ; the descent of intestine is prevented by sponge pressure on the canal; (2) making in every case a counter-opening in the fundus of the scrotum to drain the cavity left by removal of the sac and inserting a drainage tube into it. This tube may be removed in two or three days according to the amount of discharge. I consider this a great improvement in the operation. The result of the operations of the year is very satisfactory. One man unfortunately got tetanus while he was rapidly recovering from the operation. His friends insisted on removing him, and the final issue of the case could not be ascertained. All the other cases succeeded well. In one case the wound became putrid and suppurated; and in two the wound inflamed and suppurated without putrefaction. The average age of the patients was 28 years, and the average period of detention in hospital (excluding the tetanus case) 39 days. The dressing used in all cases was boracic lint next the wound and carbolic gauze and oiled paper outside of it. It is curious to note

that out of the 15 cases, 14 were right oblique inguinal herniæ, one only being on the left side. The remaining case was double. On the whole the experience of the year is in favour of resort to this operation in young and healthy subjects.]

5. *Fistula in ano*.—*a*. Mahomedan male, æt. 24. Complete fistula of 8 years' duration. Laid open. Discharged cured in 16 days.

b. Hindu male, æt. 30. Complete fistula resulting from an abscess caused by application of caustics to piles by a Madrassee quack. Fistula laid open. Pile removed after ligaturing its base. Recovered in 13 days.

c. Hindu male, æt. 18. Incomplete fistula with internal opening consequent on ischio-rectal abscess bursting inside 6 months ago. Laid freely open; sphincter divided; cavity very large; filled up in 50 days. Suffered from acute right pneumonia during his stay in hospital.

d. Mahomedan male, æt. 32. Complete fistula of 8 months' duration consequent on abscess. Laid freely open. Healed in 24 days.

e. East Indian female, æt. 25. Blind external fistula of 7 weeks' duration; completed and laid freely open. Healed in 23 days.

6. *Perinæal section*.—*a*. Hindu male, æt. 65. Attacked with retention of urine suddenly. Urethra had been lacerated by attempts at catheterism before admission. No instrument could be passed in consequence. Cock's operation performed. Two small calculi detected in urethra and removed by forceps. Full sized catheter introduced into bladder *per urethram*. Had strong fever for 2 days. Full sized metallic catheter passed on 11th day, and

every second or third day afterwards. Discharged in 31 days with perinæal wound closed and able to make water in full stream.

b. Hindu male, æt. 36. Admitted with distended bladder and extravasation of urine, dry tongue, and low fever. Perinæum laid freely open. Urine dawn off by Syme's catheter which was retained. Two free incisions made in scrotum. Scrotum sloughed; maggots developed in the wound. Got diarrhœa and sank of exhaustion 7 days after operation.

c. Hindu male, æt. 34. Admitted with retention of urine due to stricture consequent on gonorrhœa and gleet. Bladder distended. Urethra lacerated by previous attempts to pass a catheter. Cock's operation performed. Bladder emptied. No. 8 catheter passed into it *per urethram*. Bled a good deal after the operation and subsequently. Hæmorrhage stopped by plugging. Nos. 9 to 12 catheters passed on 8th day, latter introduced every 2 or 3 days. Left hospital in 45 days, with perinæal wound healed and able to make water in good stream.

d. Hindoo male, æt. 36. Admitted with organic stricture of 4 years' duration, three perinæal fistulæ consequent on an abscess which burst 4 months ago and an ischio-rectal abscess. No. 6 catheter was passed into the bladder. The perinæum was laid freely open on a guide, and the abscess opened fully. Had fever for 3 days. The urethra was fully dilated by occasional passage of instruments of increasing size. The perinæal wound and fistulæ gradually closed. Another abscess of the opposite ischio-rectal fossa had to be opened. Remained 64 days in hospital.

e. East Indian male, æt. 45. Admitted with retention of 48 hours' standing, caused by organic stricture of the urethra. Relieved twice by a No. 2 catheter. Urine ammoniacal. Perinæal section was performed and the bladder thoroughly emptied. A No. 3 catheter was afterwards passed through the urethra which was gradually dilated to its full size. The perinæal wound gradually closed, and he left hospital in 64 days, able to make water in full stream *per urethram*.

f. East Indian male, æt. 45. Admitted with several sinuses in perinæo, and retention and extravasation—the result of traumatic stricture. Perinæum laid open and bladder emptied. Catheters of increasing size were afterwards passed into the bladder. He became impatient and left hospital in 69 days before the perinæal wound was fully closed. He could make water in full stream through the penis when the lips of the perinæal wound were held together.

g. Hindu male, æt. 26. Admitted with organic stricture of 6 years' duration and perinæal fistula following abscess which formed two months ago. Nos. 1, 2 and 3 catheters passed with difficulty. Perinæum laid open without a guide, the stricture divided, and No. 12 catheter introduced. This was repeated occasionally. The perinæal wound healed and patient left hospital in 54 days, able to make water in full stream through the urethra.

h. Hindu male, æt. 18. Admitted with extravasation of urine, of 9 days' duration, due to rupture of the urethra caused by a fall off a tree. Bladder distended, had been repeatedly re-

lieved by catheter ; boggy swelling in perinæum. Perinæum laid freely open and No. 11 catheter introduced into the bladder *per urethram* Urine turbid, ammoniacal. Deep tissues of perinæum gangrenous. Considerable bleeding followed, which was stopped by plugging. Patient continued to suffer from fever of typhoid type. He got diarrhœa and sank of exhaustion two days after operation.

[In 6 of these 8 cases the urethra was reached without a guide, by what is known as Cock's operation. This is an exceedingly easy procedure, and applicable to cases when from laceration of urethra extravasation or other cause a guide cannot be introduced. The stricture can subsequently be divided by prolonging the section forwards until it reaches the point of an instrument passed down through the urethra. This practice has frequently been followed by my colleague Surgeon-Major D. O'C. Raye and myself with good result. It is advisable to pass a large sized instrument into the bladder at once, and after a week or so introduce it again and continue the use of it at short intervals, until the perinæal wound closes. I prefer this procedure to Wheelhouse's operation, which is both difficult and tedious.]

7. *Internal urethrotomy*.—West Indian male, æt. 18. Admitted with two organic strictures—one about two inches from the external meatus, and the second in the membranous part of the urethra. Anterior stricture divided by a bistoury on a director ; posterior by Civiale's urethrotome. Full sized bougies were subsequently passed to maintain the patency of the canal, Remained under treatment for 40 days.

9 *Hæmatocele*—*a.* Hindu male, æt. 35. Disease said to be of one month's duration; tunica very tense and tender, laid open freely, and dressed antiseptically; contents sanguineous serum. Wound healed by granulation in 48 days.

b. Hindu male, æt. 26. Admitted with a tense and very tender distension of the tunica vaginalis, extending beneath Poupart's ligament into the addomen to the level of the umbilicus. On puncture, sanguineous fluid escaped. An incision was made under antiseptic precautions, 96 oz. of fluid evacuated and a long drainage tube inserted. Had a severe attack of fever with rigor the same day; became worse next day, and the discharge was observed to be foetid. The sac was washed out with a lotion containing iodine. Delirium, and prostration ensued, and he died comatose 5 days after the operation. The sac was found gangrenous on post-mortem examination.

c. Mahomedan male, æt. 38. Disease of seven days' duration, caused by a kick. Tunica very tense and tender. Laid freely open; contents, sanguineous serum and small fibrinous clot. A layer of boracic gauze invaginated and stuffed with boracic lint. Wound healed by granulation in 20 days.

d. Hindu male, æt. 20. Disease of 2 years' duration; tunica very hard. On tapping turbid red fluid with liver-colored, curdy, dregs issued. Laid open freely, full of coffee ground material and dark fluid. Cavity thoroughly washed and dressed antiseptically. Operation followed by high fever. Delirium and gangrene supervened and death took place in two days.

e. East Indian male, æt. 27. Distended tunica of 2 years' duration, was tapped and injected with iodine one month ago. Laid open by a small incision and a tube inserted. Wound healed by granulation. Was suffering from secondary syphilis, which detained him in hospital 58 days.

[Case *b* is a very remarkable one. The cavity consisted of a combined tunica and processus. Hydrocles of this sort are not uncommon in India. The result of incision was the development of septicæmia of exceedingly severe type. I have another case of the kind in hospital at present (March 1884), in which suppuration had taken place prior to admission. The sac was greatly thickened. A small opening was made under the spray just sufficient to admit a drainage tube. The discharge has remained sweet and the sac is rapidly contracting. No constitutional disturbance occurred in this case. I believe that unless the sac can be drained antiseptically (which is not an easy matter) the best plan is to make a very free opening and stuff the cavity with antiseptic substances such as boracic lint. Even this practice is not devoid of danger as Case *d*. proves.]

10. *Imperforatus*.—*a.* Male child, 5 days old. Abdomen distended, parietes congested, intestinal coils visible, stercoraceous vomiting, difficult breathing; child very low. A puncture about $\frac{1}{4}$ inch deep in the centre of the perinæum. An incision was made in the middle line and gradually deepened to 2 inches. Meconium came through a trochar introduced for exploration. The bowel was freely opened, and the orifice pulled down and stitched by

4 horse hair sutures to the skin of the anus. A large amount of fæculent matter escaped. The child was taken away by its parents, and the result of operation could not be ascertained.

b. Male child, 3 days' old ; same symptoms ; depression about $\frac{1}{2}$ an inch deep at the site of the anus ; a little meconium passing by urethra. Similar operation performed. A large quantity of meconium was voided immediately after. The child sank in 5 hours.

c. Male child, $1\frac{1}{2}$ month old. Abdomen distended,—covered with dilated veins, skin glazed. Penis and scrotum œdematous. Child emaciated Vomited occasionally. Urine yellow and oily. Anal orifice existed, but probe could not be passed into the rectum, and no fæces came by anus. Similar operation performed, fæculent matter escaped at once, and the abdominal distension subsided. Was brought back for inspection three or four times. Made a good recovery.

[Case *c* is a curious one. There must have been a fistulous communication between the rectum and bladder, or urethra, sufficient to keep the child alive, but insufficient to empty the bowel thoroughly. The practice of pulling down the end of the rectum and stitching it to the anal skin is an easy and useful one.]

II. Incision for bubo with removal of glands.—*a.* Hindu, æt. 26. Had a bubo one month ago, which was opened 10 days before admission. Right inguinal glands much enlarged ; those of the left side slightly enlarged also. The right inguinal glands exposed by incision and enucleated. Wound inflamed, suppurated, and

then healed slowly by granulation. Discharged in 101 days quite recovered.

b. Englishman, æt. 23. Sympathetic bubo of one month's duration. Glands much enlarged and partly broken down. They were exposed by incision and extirpated. The wound remained aseptic and healed by granulation in 40 days.

c. East Indian male, æt. 17. Chancroidal bubo of one month's duration ; laid freely open ; gland much enlarged and infiltrated with pus ; it was enucleated. Wound healed by granulation in 24 days.

d. East Indian male, æt. 21. Double bubo following gonorrhœa. Glands much enlarged. Both bubos laid freely open, and glands extirpated, at a few days' interval. Wound healed kindly by granulation in 58 days.

[In these cases the glands were in process of suppurative disintegration. When glands begin to break down from suppuration or degeneration, it saves time and prevents the formation of sinuses to scrape them out with a sharp spoon or extirpate them. This last can easily be done by means of the fingers and director, aided perhaps by an occasional snip with the scissors.]

II. *Large abscesses.*—The abscesses included under this head were either situated deeply or in delicate and dangerous situations, or required difficult or deep incisions or dissections for their evacuation.

a. Abscesses of the neck.—*i.* Mahomedan male, æt. 23. Deep abscess of the left parotid region, of 5 months' duration, which had opened into the external meatus. A free external opening

was made and a drainage tube inserted. Complete recovery took place in 48 days. Had an attack of acute dysentery during his stay in hospital.

ii. Hindu male, æt. 30. Abscess over left mastoid process, of $2\frac{1}{2}$ months' duration; had been opened three times; bare bone detected by probe. Sinus laid freely open and dressed for granulation. Left hospital after 14 days with a small superficial sore.

iii. Native Christian female, æt. 18. Glandular swelling of three years' duration in left sub-maxillary region. Pus detected on exploration. Incision made antiseptically and drainage tube inserted; slight discharge continued for some time, but the wound eventually closed and all swelling disappeared. Under treatment 53 days.

b. Axillary abscesses.—i. Eurasian female, æt. 26. 25 days' duration. Opened antiseptically by Hilton's plan; 5 oz.; drainage tube inserted. Complete recovery in 11 days.

ii. Eurasian female, æt. 15. 15 days' duration. Opened antiseptically by Hilton's method; 10 oz.; tube inserted. Discharged cured in 24 days.

iii. Mahomedan male, æt. 35, 20 days' duration. Opened antiseptically by Hilton's method; 5 oz.; tube inserted; very free discharge continued for some days. Finally closed in 34 days.

c. Perihepatic abscesses.—i. East Indian male, æt. 35. Admitted with a fluctuating swelling in right hypochondrium; found on exploration to contain sanious pus. Opened under spray. Liver not enlarged. A large quantity of brickdust coloured matter escaped; drainage tube inserted and antiseptic dressing applied. The discharge

continued profuse for some time. It gradually became scantier, lighter and more sticky. Remained aseptic throughout. Wound healed in 35 days.

ii. Hindu male, æt. 40. Fluctuating swelling of right hypochondrium, of 4 months' duration; history of fever. Right lobe of liver enlarged. Thick sanious pus discovered by exploration. A small opening made and drainage tube inserted under antiseptic precautions. High fever and delirium ensued, but improvement took place. Discharge very profuse, like apple jelly. Became putrid and changed its character to a thin grumous fluid a few days before death. Got fever of a typhoid type and died comatose 31 days after operation. On post-mortum examination the surface of the liver was found to be deeply eroded. Another large abscess existed at the back of the right lobe. The substance of the liver was extensively destroyed. The constitutional disturbance which proved fatal followed the change in the character of the discharge.

iii. Hindu male, æt. 54. Admitted with a fluctuating swelling in the left hypochondriac region, of 1 month's duration; development accompanied by fever. Explored and found to contain pus. Opened antiseptically by a bistoury, 14 oz. of thick reddish brown matter escaped; tube inserted and antiseptic dressing applied. No constitutional disturbance. Discharge gradually became scantier and more lymphic. Discharged in 46 days perfectly recovered. Dressings changed every 2, 3 or 4 days; the interval being prolonged and tube shortened as the discharge became scanty.

d. abscesses of the Abdominal parietes.—i. Mahomedan male, æt. 20. Fluctuating swelling of left hypochondrium, of 8 days' duration. A small opening made and tube inserted. Antiseptic dressing applied. Healed in 10 days.

ii. Hindu male, æt. 30. Fluctuating swelling in left iliac region, of 20 days' duration. Opened antiseptically and drainage tube inserted; suffered from fever for a month and urine became turbid and albuminous about 3 weeks after opening. Wound finally closed and patient discharged in 68 days.

e. Iliac abscess.—Hindu male, æt. 28. Abscess of 6 months' duration; had been mistaken for a bubo and opened in the left groin, profuse foetid discharge came from a sinus through which a probe passed deeply into the left iliac fossa. Thigh flexed on abdomen and leg on thigh. Suffering from hectic fever. A free opening was made below Poupart's ligament half way between the anterior superior spinous process of the ilium and the femoral artery, and a drainage tube inserted into the abscess cavity. Very free discharge continued. The original sinus closed and the counter-opening had almost healed, when fresh accumulation took place, with fever and rigor. The wound was re-opened and tube again inserted. The sinus finally closed under careful treatment, and patient was discharged 258 days after the counter-opening had been made. His health was greatly improved. Some thickening remained in the iliac fossa and some stiffness of the hip joint.

f. Bubo.—Irishman, æt. 25. Chancroidal bubo; laid freely open antiseptically; healed in 16 days.

g. *Scrotal abscess*.—Eurasian male, æt. 45, 27 days' duration; opened antiseptically; 6 oz. of pus; closed in 10 days.

h. *Abscesses of tunica vaginalis (suppurated hydrocele)*.—i. Mahomedan male, æt. 55. Left hydrocele of 10 years' standing tapped on two occasions; became swollen, tense and painful recently. Pus discovered on tapping tunica; laid open and drainage tube inserted. Fever ensued, which lasted for a week; tunica sloughed off and wound healed and granulated in 54 days.

ii. Native Christian male, æt. 18 years. Right hydrocele; tapped five days previous to admission; inflamed. Pus discovered by exploring; tunica opened antiseptically and drainage tube inserted. Healed in 10 days.

i.—*Perinæal abscesses*. i.—East Indian clerk, æt. 35. Painful swelling in perinæum, of 3 days' duration, accompanied with fever and difficult micturition. Perinæal section performed. Wound closed in 11 days. No urine came through it.

ii.—Mahomedan male, æt 35. Suffered from gonorrhœa 17 years ago, succeeded by gleet. Symptoms of stricture gradually appeared, and these have gradually become more pronounced. Had strong fever 13 days ago, succeeded by painful swelling in the perinæum. Retention of urine for 7 days. Scrotum of penis œdematous. Bladder extremely distended. Crackling boggy swelling above pubis. Pronounced symptoms of uræmia. Perinæum laid open freely. A large quantity of foetid pus and urine gushed out. Urethra freely laid open and bladder emptied by catheter No. 10 passed *per urethram*. Two days afterwards a free incision made in the middle line above pubis. A large quan-

tity of foetid pus and slough removed. Both wounds healed gradually by granulation. Full sized catheter passed occasionally. Discharged well in 16 days.

iii.—Hindu shopkeeper, æt. 22. Gonorrhœa 5 months ago, followed by gleet and symptoms of stricture. Painful swellings appeared in perinæum and rightischio-rectal fossa, with fever, a week ago. Micturition difficult ; health bad ; liver and spleen enlarged. Perinæum laid freely open, pus and urine welled out. Urethra opened. Ischio-rectal abscess opened, the sphincter being freely divided at the same time. No. 10 catheter passed into bladder *per urethram*. Did well for 23 days, wounds granulating and contracting ; urethra kept open by passing full sized catheter. Then got diarrhœa, which resisted treatment and proved fatal by exhaustion in 12 days—35 days after operation.

iv.—Jew, æt. 48. Painful swelling in perinæum, of 20 days' duration ; laid open freely. Pus issued and afterwards urine. Wound healed in 34 days. Bougies 3 and 4 were passed on one occasion, but this was succeeded by so severe an attack of fever that the experiment was not repeated

v.—Mahomedan male, æt. 35. Painful swelling in perinæum with fever of 10 days' duration ; laid open freely in middle line ; about 2 oz. of pus issued. Wound healed and patient discharged in 17 days. No urine came through the opening.

vi.—Hindu male, æt. 40. Painful fluctuating perinæal swelling of 1 month's duration ; fever and difficulty of micturition ; laid open freely. Sphincter ani divided as the cavity

reached the bowel. Wound healed by granulation in 35 days. No urine escaped through it.

[Those cases in which no issue of urine took place through the incision made into the abscess, prove that at least some of these abscesses do not take their origin from within the urethra. I am inclined to think that very few of them do, and that communications with the urethra, when they exist, are secondary.]

j. Prostatic abscess.—Englishman, æt. 30. Admitted with retention of urine. Prostatic abscess discovered by rectal examination; laid open freely through perinæum: No. 10 catheter passed. Left hospital in 14 days. Wound closed, able to make water in full stream.

k. Peri-rectal abscess.—Native Christian, æt. 25. Abscess surrounding rectum, of 3 months' duration, burst into the gut 20 days ago; laid freely open into gut on both sides; sphincter divided. A second free incision required in 57 days. Wound now (15th March) contracting and filling up from the bottom. Is anæmic; constitution feeble.

l. Gluteal abscesses. i.—East Indian female child, æt. 4. Abscess of four days' duration. Opened antiseptically. Healed in 12 days.

ii. Hindu female, æt. 18, 15 days' duration; below left gluteus maximus. Opened antiseptically. Healed in 23 days.

m. Abscess of thigh. i.—East Indian female, æt. 10, four days' duration, under extensor muscles of right thigh. Opened antiseptically by Hilton's plan. Healed in 10 days.

ii.—Mahomedan female, æt. 35. Chronic abscess of left thigh, of 2 months' duration. Opened antiseptically. Healed in 18 days.

iii.—Eurasian female, æt. 28. Large abscess of upper part of left thigh, of 10 days' duration. Opened antiseptically by Hilton's plan. Healed in 8 days.

iv.—Eurasian female, æt. 30. Large abscess of left thigh, of one month's duration. Opened antiseptically. Healed in 7 days.

v.—East Indian male, æt. 27. Large deep abscess of left thigh, of 7 days' duration. Opened antiseptically by Hilton's method. Healed in 39 days.

vi.—Native Christian female, æt. 30. Large abscess behind left thigh, of 5 days' duration. Opened antiseptically by Hilton's method. Healed in 14 days.

vii.—Chinese male, æt. 16. Large deep abscess of upper part of right thigh, of 15 days' duration. Opened antiseptically. A long sinus had to be laid open in 17 days. Finally healed in 54 days.

n. *Popliteal abscesses.* i.—East Indian student, æt. 14. Diffuse cellulitis of 7 days' duration, fluctuation over popliteal space. Opened antiseptically. Healed in 8 days.

ii.—Hindu male, æt. 14. Inflammatory swelling behind knee-joint, of 12 days' duration. Knee joint acutely flexed. Pus detected and antiseptic opening made. Healed in 26 days. Joint gradually straightened.

iii.—Hindu male, æt. 11. Similar case of 20 days' duration. Opened antiseptically. Healed in 18 days.

o. *Abscess of leg.*—Eurasian female, æt. 14. Collection under sural muscles, of 15 days' formation. Opened antiseptically on inner side of leg.

Discharged in 35 days. Knee-joint had to be forcibly straightened.

p. Multiple abscesses. i.—Eurasian male, æt. 36. Acute abscess of right arm and right thigh of 12 days' duration. Opened simultaneously with antiseptic precautions. Drainage tubes inserted. Healed in 17 days.

ii.—Hindu male, æt. 32. Axillary abscess of right side and abscess of right arm, of 13 days' duration. Opened spontaneously, tube inserted, 5 other collections formed in different parts of the body. Got pneumonia, diarrhœa, and bed-sores. Abscesses laid open and suitable constitutional remedies given. Recovered in 98 days.

VIII.—REPARATIVE OPERATIONS.

1. *For Atresia oris.* i.—Mahomedan male, æt. 20. Jaws bound together by cicatricial bands due to destruction of buccal mucous membrane by mercurial salivation. Bands divided by probe-pointed bistoury and mouth forced open by Smith's gag. This was used periodically to maintain patency, and he was discharged in 28 days, able to open his mouth fully.

iii. Hindu male, æt. 28. Similar case but more aggravated; alveolar processes necrosed and teeth loose. Three sequestra and teeth were removed after the bands had been divided. Patency was maintained by occasional insertion of a bivalve speculum. Left hospital in 21 days greatly improved.

2. *For cleft palate.*—(Staphyloraphy)—Hindu male, æt. 7. Fissure through both hard and soft palate. Edges pared; soft dissected off hard palate, latter divided on each side of cleft by chisel and hammer, and prized towards centre; pillars of fauces snipped across by scissors. Uni-

on took place except at two points where small holes remained. The father would not permit a second operation.

3. *For harelip*.—Same subject. Single complete fissure continuous with the cleft of the palate. Operation performed 10 days after the staphyloraphy. Edges pared ; ala freed ; wound stitched by horse hair. No dressing applied. Healed by first intention. Left hospital in 10 days.

4. *For Vesico-vaginal fistula*.—Hindu female, —æt. 20 (prostitute.) Large aperture in anterior vaginal wall just behind meatus urinarius, the result of syphilitic ulceration. Condylomata on vulva. Urethra dilated, forefinger of left hand introduced into bladder. Anterior wall of vagina brought out into vulva in this manner. Edges of fistula pared. Silver and horse hair stitches applied. Drainage tube inserted into bladder and stitched with horse hair to meatus. In 10 days tubes and stitches removed ; a small opening remained unclosed. This was pared and stitched again. In 10 days stitches were removed. A small hole still remained. Patient refused to undergo further operation, and was discharged.

5. *For talipes varus*.—East Indian child, 3 years. Foot quite inverted, walked on the outer malleolus and astragalus. Tendo Achillis, both tibials and flexor longus divided ; position of foot partially rectified by splints and bandages. Left hospital in 16 days greatly improved ; supplied with a zinc shoe to be constantly worn,

6. *For cicatrix after burn*.—Mahomedan male, æt. 35. Right arm burnt in infancy. Cicatricial web prolonging folds of axilla and binding

arm to chest ; another on the anterior aspect of the elbow-joint producing acute flexure and fixation. These were freely divided, and by careful dressing during the healing process the limb was restored to usefulness. Remained 70 days in hospital.

7. *For phimosis (circumcision).*—*a.* Hindu male, æt. 35. Elephantoid mass below glans, the result of paraphimosis three years ago. The whole of the prepuce was removed and the skin of the penis united to the root of the glans by horse hair stitches. Wound united by first intention in 12 days.

b. East Indian male, æt. 17. Admitted with gonorrhœa, phimosis and double suppurating bubo. Prepuce removed by oblique incision, mucous membrane slit up on each side, horse hair stitches applied. Bubo laid open. Left hospital quite recovered in 59 days.

c. East Indian male, æt. 20. Orifice of prepuce contracted ; syphilitic sore within ; suffering from secondary eruption. Circumcision performed and specific treatment resorted to. Discharged well in 24 days.

XI. 1. Hydrocele tapped and injected.—Mahomedan male, æt. 35. Large double hydrocele ; tapped simultaneously, and injected with iodine. The right contained about 2 lbs. and the left 1 lb. of fluid. Satisfactory result. Left hospital in 7 days.

2. *Spina bifida tapped and injected.*—Mahomedan male, 1 year old. Large fluid tumour over sacrum, size of a fœtal head, 12 inches in circumference ; tapped with a hypodermic syringe and ʒss of Morton's iodo-glycerine solution injected. Refilled in a week. This was repeated

8 times at intervals of 7 to 10 days, from 5 to 6 oz. being evacuated on each occasion. Fever followed the first two operations. It was intended to increase the amount of fluid injected, but the parents grew impatient and withdrew the child after 64 days' residence in hospital. The treatment did no good whatever. A large aperture could be discovered in the back of the sacrum when the tumour was emptied.

3. *Cystic tumour of neck tapped*.—Hindu male, æt. 50. Fluid tumour on right side of neck, of 10 years' duration. Experienced pain from pressure on the brachial plexus. 5 ounces of clear serous fluid were withdrawn by a small trochar and the tumour collapsed. Patient left hospital the same day and has not since returned.

GENERAL REMARKS

I. *Death-rate*.—The mortality of the year was high—18·8 per cent. The death-rates of the four preceding series of operations were,—1879, 18·5 ; 1880, 10·7 ; 1881, 15·2, and 1882, 9·9. To the deaths which actually took place in hospital must be added 3 cases which were removed in a moribund state, so that 20·5 would more correctly represent the true mortality among these cases, which were, with exception of one or two instances treated to the end. It will be observed that in a large proportion of the fatal cases operation was resorted to under very unfavourable or desperate circumstances, with a faint hope of saving life otherwise certainly and inevitably doomed. The dread of a high death-rate has never been permitted to interfere with an obvious duty in such circumstances.

2 *Death causes*.—These may be displayed as follows:—

Septicæmia	...	...	10
Tetanus	...	...	6
Asthenia and exhaustion		...	5
Shock	..	...	3
Pneumonia	...	...	3
Secondary hæmorrhage		...	2
Dysentery	...	...	1
Chloroform asphyxia	1
Diphtheria	1
Obstruction of bowels		...	1
Peritonitis	1

—
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In the fatal cases of septic poisoning a putrid or gangrenous state of the wound existed, and a reference to the detailed cases will show that this occurred under circumstances in which its prevention was difficult or impossible. The number of deaths caused by tetanus is large, and most of them arose in connection with scrotal operations. In one case the disease was associated with spreading traumatic gangrene. I have seen other instances of this combination, and the fatal issue is exceedingly swift. In the cases of exhaustion, constitutional exhaustion, the shock of injury and septic poisoning were so associated as to render a more precise term inaccurate. In the cases of death by shock the result was partly due to the feeble constitution of the subject and partly to the severity of the operation. In the fatal cases of pneumonia and dysentery these diseases developed after operation, and were probably the result of chill acting on a susceptible system.

The two deaths from secondary hæmorrhage took place in deep wounds of the neck, which had undergone putrid inflammation. Secondary hæmorrhage has been an exceedingly rare accident in these wards since antiseptic organic ligatures were introduced. The other death causes are special, and do not admit of general remark.

3 *Hospitalism and antiseptics.*—There has been no epidemic of septic disease of any shape in the hospital during the year. Wounds have as a rule done well, and when septic conditions arose in any case, it was due more to circumstances connected with the individual and his wound or injury than to any contamination derived from the hospital. To prevent the occurrence of putrefaction in wounds, has now become an established object and rule in surgical practice. In some wounds and in some patients this is more difficult of accomplishment than in others, and in this country the maintenance of purity in wounds is not always an easy matter. Increasing experience has impressed me with an increasingly thorough conviction of the great value of the antiseptic system, and the more closely I have followed the footsteps of Lister the greater comfort, success and security have I obtained. During the past year I have resorted to the use of boracic acid in the form of lint and ointment more largely than before, and I have found that, with some simple precautions at the time of operation and dressing, it is an efficient antiseptic, easy of application and perfectly safe. I have, however, continued to use carbolic acid in the form of spray and lotion, and in special cases have also employed carbolic gauze as an outside dressing.





PRECIS OF OPERATIONS

PERFORMED IN THE

WARDS OF THE FIRST SURGEON, MEDICAL COLLEGE
HOSPITAL,

During the year 1886.

BY SURGEON-MAJOR K. MCLEOD, A.M., M.D., F.R.C.S.E.,
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SINCE the last of this series of papers was published (vide *Indian Medical Gazette* for 1884, pp. 94, 165), a new Nomenclature of Diseases has been issued (1885), containing, as an appendix, a new classification of surgical operations. In my previous papers I followed the classification laid down in the "Nomenclature" of 1868. The recent classification differs in some essential points from that, and the question arises whether I ought now to follow the old or adopt the new. In my book on "Operative Surgery in the Medical College Hospital, Calcutta," I devoted a short chapter to the subject of Classification of Surgical Operations. I showed that three principles or bases governed the naming and classing of operations, namely—(1) the *pathological* or the disease or diseased condition for which the operation is performed; (2) the *therapeutical* or the operative procedure adopted; and (3) the *anatomical* or the part of the

body affected by disease or deformity and subjected to operation. I showed that in the old classification while the three principles were held in view in naming and classing, they were employed without system or uniformity so that in one case the disease was the main governing principle (tumours, calculi, &c.), in another the mode of operating (incision, amputation), and in a third the part of the body affected (operation on the eye, bones, joints, arteries, viens, &c.). And, as with the main classes so with the sub-classes, and names; the three fundamental ideas were transposed according to convenience or fancy, the general result being a classification without a ruling principle, and, therefore, an imperfect and confused one. In the new classification of operations, the anatomical basis has been much more largely adopted as a primary principle just as diseases have been more strictly classified in the body of the "Nomenclature" on the same plan. There is much to say for this system. It presents a certain unalterable basis of classing, and, both diseases and the methods of dealing with them by operation present great differences according to the part of the body affected. Compare, for example, cysts of the ovary with cysts elsewhere; cancer of the tongue with cancer of the rectum; incision for extravasation of urine with incision for whitlow. The objections to the anatomical plan are that it necessarily separates, and places in different classes, things pathologically or operatively identical or similar; and this has been felt in framing the new classification so strongly that pathological groups are still retained (tu-

mours, abscess, hæmorrhage, aneurism), while amputation—a method of operating—still holds a prominent place in the scheme.

The fact is, that any classification rigidly carried out on any of the three principles will drag likes apart, and, perhaps, the anatomical plan does this to a greater extent than either of the other two. It follows from what I have written, that the new classification is very far from perfect, and, inasmuch as it is more bulky and elaborate, it is not so convenient as the old. For this reason, and for the sake of uniformity and facility of comparison, I have determined to adhere to the plan of classification adopted in previous papers. Indeed, as long as the terms descriptive of operations express the three ideas I have specified, it does not matter much what classification is used, because the items can be redistributed according to fancy or need at any future time. With these preliminary remarks, I present a tabular statement of the operations performed during the calendar year 1886. In future numbers, I hope to give a short account of each of the more important cases:—

Table of Operations performed during 1886.

DESCRIPTION OF OPERATION.	Number.	Died.
I. OPERATIONS ON THE EYE AND ITS APPENDAGES ... ...	... 0	0
II. OPERATIONS ON ARTERIES—		
1. Ligature of brachial for traumatic aneurism ... ...	... 1	0
Total	... 1	0

III. OPERATIONS ON JOINTS—

No. Died.

1. Reduction of dislocation of shoulder joint...	2	0
2. Extension of stiff joints—		
<i>a</i> Shoulder...	2	0
<i>b</i> Elbow ...	1	0
<i>c</i> Knee ...	3	0
3. Excision of joints—		
<i>a</i> Elbow ...	1	1
<i>b</i> Knee ...	1	0
<i>c</i> Ankle ...	1	0
Total ...	11	1

IV. OPERATIONS ON BONES—

1. Partial excision for necrosis (sequestrotomy) ...	7	1
2. Re-section for un-united fracture ...	1	0
Total ...	8	1

V. AMPUTATION. *A.—For injury.*

1. Primary of the arm ...	2	0
2. „ of the forearm ...	1	0
3. Secondary of both arms for gangrene ...	1	1
4. „ of the leg for gangrene ...	1	1
5. „ „ for spreading traumatic gangrene ..	1	1
Total ...	6	3

B.—For Disease.

6. Through shoulder joint, for sarcoma ...	1	0
7. Of the thigh, for sarcoma ...	1	1
8. Of both legs, for dry gangrene ...	1	0
9. Of the leg, for gangrene ...	1	0
10. „ for caries of ankle ...	1	0
11. „ for epithelioma of foot ...	1	0
12. Above the ankle (Syme's), for sarcoma of foot	1	0
13. „ „ for disease of ankle joint ...	1	0
14. Of the penis for ulceration ...	1	0
Total ...	9	1

Grand Total of Amputations ... 15 4

VI. REMOVAL OF TUMOURS (BY EXCISION.)

<i>A.—Malignant.</i>		No. Died.	
1. Scirrhus of mamma and axillary glands ...	5	1	✓
2. Cancerous glands (recurrent) ...	2	0	
3. Epithelioma <i>a</i> of scalp ...	1	0	
<i>b</i> of nose and face ...	1	1	✓
<i>c</i> of cheek ...	1	0	
<i>d</i> of lip ...	1	0	
<i>e</i> of tongue ...	2	0	
<i>f</i> of chin and lower jaw (recurrent) ...	2	0	
<i>g</i> of neck (recurrent) ...	1	1	✓
<i>h</i> of penis and inguinal glands ...	1	1	✓
4. Sarcoma. <i>a</i> of upper jaw ...	1	0	
<i>b</i> of hard palate ...	1	1	✓
<i>c</i> of shoulder ...	1	0	
<i>d</i> of arm ...	1	0	
<i>e</i> of back ...	1	0	
<i>f</i> of buttock ...	1	0	
Total ...		23	5

B.—Non-Malignant.

1. Elephantiasis <i>a</i> of scrotum ...	20	1	
<i>b</i> of labia ...	1	0	
2. Lipoma ...	2	0	
3. Epulis ...	1	0	
4. Nasopharyngeal polypus ...	1	0	
5. Osteo-cystoma of lower jaw ...	2	0	
6. Papilloma of penis ...	1	0	
7. Hæmorrhoids ...	3	0	
Total ...		31	1

Grand Total of Tumours ... 54 6

VII. REMOVAL OF FOREIGN BODIES.

1. From cheek ...	1	0	
Total ...		1	0

VIII. REMOVAL OF CALCULI.

1. Urethral, by incision ...	1	0	
2. Vesical, by supra pubic lithotomy ...	1	0	
3. „ by litholapaxy ...	5	1	
Total ...		7	1

from a height of five feet a month before admission. Injury treated in the country as a fracture of elbow. About a week ago a swelling was observed above the elbow in course of the brachial artery, which on puncture, emitted blood. This was found to be an aneurism which, after administration of chloroform and application of an India-rubber cord on its proximal aspect, was laid open. Blood and clot were removed from the cavity and an aperture was found on its inner wall communicating with the brachial artery. This was carefully isolated and tied above and below, a drainage tube was inserted, and the wound stitched and dressed with strict antiseptic precautions. The wound remained aseptic and healed by first intention. The movements of the limb were fully restored, and patient left hospital in 53 days with a sound useful limb.

* * The perfect success of antiseptic treatment in procuring the best and speediest repair possible was beautifully illustrated by this case.

III. OPERATIONS ON JOINTS.

1. (i, ii.)—*Reduction of dislocation of the shoulder-joint.*—The dislocation (downwards) was reduced in both these cases by manipulation, and the patients left hospital the same day.
2. a. i.—*Manipulation of stiff shoulder-joint.*—Hindu male, *æt.* 35. Shoulder-joint stiffened six months ago in consequence of severe inflammation of right arm caused by a prick of the index finger. Movements greatly impaired. Movements of fingers also much impaired. Chloroform was administered, and the stiff joint

freely manipulated. Passive motion was subsequently repeated daily. He left the hospital in 52 days with the movements of the arm and fingers greatly improved.

ii. Eurasian, male, *æt.* 32. The right shoulder-joint was injured a month ago, and its movements in every direction are almost annulled. They were freely restored under chloroform, and patient left hospital in three days.

b. Bending of stiff elbow-joint.—Hindu male *æt.* 12. Had a fall four months ago, followed by abscess in front of the elbow-joint. The ulna appears to have been broken near its upper end, the radius dislocated, and the internal condyle of the humerus separated from the shaft. The joint is fixed at a right angle, and very little movement remains; the fingers are also flexed and stiff. Forcible movement under chloroform followed by frequent repeated passive movement subsequently caused considerable improvement.

c. Extension of stiff knee-joints.

i. Hindu male, *æt.* 36. Left knee fixed at a right angle. This condition ensued on gonorrhœal arthritis, which occurred eight months ago. The joint was forcibly straightened on four different occasions under chloroform. He remained in hospital 42 days, and was discharged with a straight but stiff leg.

ii. Hindu male, *æt.* 29. Had fever four months ago, followed by swelling and flexion of the knee-joint. History of gonorrhœa and rheumatism, leg flexed on thigh at an angle of 30° .

The knee-joint was forcibly flexed twice under chloroform. The straightening was completed by a MacIntyre splint and maintained by a starch bandage. He was discharged 69 days after admission with a useful limb. The knee-joint was straight and stiff, and some displacement backwards of the head of the tibia had taken place.

iii. Native Christian female, *æt.* 15. Admitted with two sinuses on the right thigh, resulting from abscess, and a stiff but straight-knee-joint. The sinuses were closed and the joint freely moved under chloroform. Adhesions were felt to give way. Passive movement was repeated on several subsequent occasions. She remained in hospital 120 days, and left with a useful and moveable joint.

* * In each of these cases of false or fibrous ankylosis considerable improvement and restoration to usefulness were obtained by forcible movement under chloroform and subsequent manipulation. Such cases, which are very common in India, require patient and prolonged treatment; but the result in most instances amply repays the trouble taken. The cause and degree of stiffening determine the kind, amount, and duration of manipulation necessary. If any movement remains in a joint and no active disease exists, treatment of this kind should be tried, at any rate in the first instance.

3. *a. Excision of the elbow-joint.*—Hindu male, *æt.* 16. Had sustained compound dislocation of left elbow-joint and fracture of internal condyle by a fall off a tree from a height

of 30 feet. The wound measured three inches and had been stitched but not drained. He suffered from fever. A drainage tube was inserted on his admission and an effort made to render the wound aseptic. Eight days after admission the discharge was found to be gangrenous, and wound sloughy; humerus extensively denuded; patient delirious; temperature 103° ; tongue dry. Resection was performed under antiseptic precautions as a forlorn hope. This did not stay the progress of septic infection; secondary abscesses appeared in the forearm, left iliac fossa, and over left tibia; the latter two baring the bone extensively. A bed sore formed, which took on a sloughing character, and laid bare the sacrum and iliac bones. It finally communicated with the iliac abscess and bladder. *For a few days before his death patient passed all his urine through the bed sore.* He died of exhaustion from pyæmia 21 days after the operation. A *post-mortem* examination was not permitted.

* * Had this wound been Listerised and drained at the commencement, the issue would probably have been different. Attempts to render it aseptic after admission failed and septic periostitis set in. Amputation was recommended but declined, and resection was consented to after considerable persuasion. It was too late. Pyæmia, already established, pursued a swift and virulent course. It is curious to note that the secondary lesions affected the same tissue, periosteum, as the primary. Micturition through the bed sore was a rare and sad incident of the close of the case.

b. *Excision of knee-joint.* — Mahomedan male, *æt.* 11, admitted 5th July 1885. Had sustained an injury of left knee-joint six months previously, which led to its becoming fixed at right angle. It was straightened under chloroform on 23rd August and kept on a splint till 6th October. It was then found to be weak and tender. The head of the tibia was displaced behind the lower end of the femur, and he could not use the limb. It was put up in a starch bandage, and he could then limp about with crutches; the bandage was removed and reapplied in November, and again removed in February 1886, when the joint was found to be as tender as ever and the limb as useless for support and progression. Resection was accordingly recommended, and performed on the 18th of February.

The operation was performed with strict antiseptic precautions. A semi-lunar flap was taken from the front of the knee-joint, the patella removed, and the ends of the femur and tibia turned out. A wedge was cut out of the condyles of the femur antero-posteriorly as far as the epiphysial plate, and a corresponding wedge shaped on the head of the tibia. This fitted into the femoral angle. The wound was carefully stitched and drained and the limb placed on a straight, posterior splint. A severe attack of erysipelas, affecting the leg which had been operated on, set in on the third day after operation. There were other cases of this disease in the hospital at the time. This lasted a fortnight and caused destructive inflammation of the wound. The skin united in 24 days, leaving three

sinuses, which discharged freely, and through which, eventually some small sequestra were removed. The process of consolidation was very prolonged one, and the patient was not able to leave hospital till the 19th of October. He was able to support the weight of his body on the limb and to walk about actively with the aid of crutches. The joint was free of pain, and the femur and tibia had undergone satisfactory union.

* * In this case of fibrous ankylosis, straightening and subsequent prolonged fixation failed. The joint was found to be carious on resection. The cutting of a wedge out of the angle of the femur, and fitting the head of the tibia into it gave strength to the apposition of the bones and permitted preservation of the epiphysal plates. Recovery was greatly delayed by the attack of erysipelas, which the patient underwent soon after the operation, and which caused destructive inflammation of the wound cavity; but the final result was satisfactory.

c. Excision of the ankle-joint.—Hindu male *æt.* 32. Patient was admitted with cario-necrosis of the lower end of the left tibia, which was operated on (see IV. 1. f. i. below); the ankle joint becoming seriously diseased, it was resected on the 5th of April. Lateral incisions were made, the diseased surface of the astragalus removed by gouge, and the extremities of the tibia and fibula by bone forceps. The skin wounds partially healed, but the cavity did not fill up, and bare and carious bone being discovered by probing, amputation of the leg was performed on the 23rd of June (see V. 10, below).

IV. OPERATIONS ON BONES.

Partial excision for necrosis (sequestromy).

a. *Frontal bone and rib.*—European male, *æt.* 40. Suffered from syphilis some years ago, and had guminatous swellings on the head and chest four years ago, which suppurated and discharged, leaving sinuses through which dead bone was discovered. The sinuses were enlarged by incision and small sequestra removed. The resulting wounds healed by granulation. He remained in hospital 37 days.

b. *Upper and lower jaws.*—Hindu male, *æt.* 30. Had fever nine months ago, followed by inflammation of the alveolar process of the left upper jaw, and of the lower jaw, on the right side. Several teeth had fallen out, and others were loose. These were extracted, and the sequestra removed. Left hospital next day.

c. *Lower jaw.*—Mahomedan male, *æt.* 29. Had fever 10 months ago, followed by inflammation of left side of lower jaw, resulting in necrosis. A large sequestrum was removed under chloroform, and he left hospital in five days.

d. *Pelvis.*—Mahomedan male, *æt.* 12. Had fever, followed by iliac abscess, a year ago. A large ulcer existed on the front of the right thigh, below Poupart's ligament, at the upper part of which there was a sinus leading into the iliac fossa, through which loose dead bone was discovered. The spleen was much enlarged. The sinus was enlarged, the sequestra removed, drainage tube inserted, antiseptic dressing applied, and extension by weight and pulley em-

ployed to straighten the hip-joint, which was somewhat bent. No sign of repair ensued, the ileum was bare, and abundant discharge of pus came through the tube. He lingered for 10½ months, and eventually died of exhaustion.

* * Failure in this case was due to the bad constitution and health of the patient.

e. Femur.—Mahomedan male, *æt.* 32. Had an abscess (probably periosteal) of the lower end of right femur 17 years ago, which burst spontaneously and seemed to heal, but broke out repeatedly. An open sinus has existed for 12 years, through which small bits of bone came. This sinus was enlarged, several small sequestra removed, and the bone filed down with an osteotrite. It was very dense (sclerosed). The sinus was carefully drained, and contracted considerably. He grew tired of treatment and left hospital after 68 days' residence, considerably improved, but not cured.

f. Bones of leg.—Hindu male, *æt.* 32, admitted 23rd February. About nine months ago had an abscess over the lower ends of the tibia, resulting in sinus, which closed in three months, but reopened in a month, and has continued discharging. Dead bone could be felt through four sinuses when he was admitted. A free crucial incision was made on the 27th of July, a sequestrum removed, and the cavity which contained it, gouged out. No improvement followed and an abscess formed in a month over the outer malleolus, which was opened and found to lead to dead bone and communicate with a diseased ankle-joint. Accordingly resection of

he ankle-joint was performed on the 10th of April (*vide* III, 3. c., *supra*).

ii. Hindu male, *æ*t. 18. Admitted with sinuses leading to base, tibia, and fibula of resulting from an abscess which occurred six months ago. The sinuses were freely laid open and small sequestra removed. The wounds healed by granulation. Patient left hospital with a sound leg after a stay of 71 days.

2. *Resection for ununited fracture of bone of forearm.*—Hindu male, *æ*t. 30. Sustained a compound fracture of left forearm by the bite of a mule a year and nine months ago. Both bones ununited. Seat of fracture $2\frac{1}{2}$ inches above the wrist-joint. Wrist-joint stiff, but movement of fingers perfect.

The false joint between the radial fragments was exposed by a longitudinal incision. The surfaces of the joint were removed, and the fragments drilled and brought together by silver wire. The ulnar false joint was similarly exposed by a longitudinal incision, on the ulnar side; the fragments were found to be pointed and attached by fibrous tissue. The ends were snipped off by bone-forceps and left in the wound. Both wounds were carefully stitched and dressed antiseptically. The wounds remained aseptic and healed by first intention. The wire was removed 11 days after operation, and its track healed up in four days. The limb was then fixed in starch. Patient left hospital 93 days after the operation. The radius had united, but there was still slight movement between the ulnar fragments. He was furnished with a leather belt to steady the limb.

* * * The expedient adopted in this case in order to procure union of the pointed fragments of the ulna is worthy of notice. The points were snipped off by bone-forceps, and, having been placed behind the freshened ends of the broken shaft, were left in the wound. The object was to leave as much material as possible for the formation of new bone in the wound. For this purpose it is necessary : (a) to preserve the soft tissue connections of the separated fragments as much as possible; and (b) to keep the wound aseptic. The result was not perfect, but was probably more so than if the pieces had been removed. The same expedient was employed in a similar case in 1885 with partial success. The patient absconded before the final result of the expedient could be observed.

V. AMPUTATIONS FOR INJURY.

1. *Primary amputation of the arm.*—i. Hind male, *æt.* 16. Lower third of arm badly lacerated by a machine six hours before admission. Amputation of the arm above the seat of injury performed by the modified circular method under strict antiseptic precautions. Drainage tube removed on fourth and stitches on tenth day. Left hospital in 23 days with a sound stump.

ii. Hindu male, *æt.* 25. Forearm smashed by an oil-machine. Amputation performed above elbow by modified circular plan. Wound healed by first intention, and patient left hospital with a sound stump in 30 days.

2. *Primary amputation of the forearm.*—Hindu male, *æt.* 20. Left hand and wrist crushed

by a wheel in a mill. Amputation performed at lower third of forearm. Wound healed by first intention, and patient discharged 18 days after operation.

3. *Secondary amputation of both arms for gangrene.*—Hindu male, *æt.* 30. Admitted on 31st May with severe burn of both hands and forearms, caused by falling into a hearth of blazing coal. Extensive sloughs formed: and on the 3rd of June gangrene was found to have set in, and to have reached the upper third of the right arm and a little above the elbow of the left arm. He was suffering from symptoms of blood-poisoning. Temperature 102° . Both arms were amputated well beyond the seat of disease, the right just below the shoulder-joint, and the left at the lower third. Patient died of shock the same evening. Gangrene had recurred on the left side.

* * A hopeless case.

4. *Secondary amputation of the leg for gangrene.*—Hindu female, *æt.* 50. Admitted 13th October with compound fracture of the left leg above the ankle caused by the wheel of a cart. Wound sloughy, and bone bare. An attempt was made to save the foot, but the leg became œdematous, the wound more unhealthy, and symptoms of septicæmia appeared. The leg was removed below the knee on the 18th. The case did badly, flaps sloughed, and constitutional condition got worse. She died 5 days after the operation from exhaustion caused by septicæmia.

* * Amputation performed as a *dernier resort*.

5. *Secondary amputation of the leg for spreading traumatic gangrene.*—Hindu male, *æt.* 62. Admitted with severe lacerated wound

of right foot exposing the os calcis. The wound did badly from first. It bled on the second day and was found gangrenous on the fourth. The patient's temperature was high throughout. On the sixth day the gangrene had invaded the leg and amputation was performed below the knee tetanus set in, and patient died 24 hours after the operation.

* * A hopeless case.

AMPUTATIONS FOR DISEASE.

6. *Amputation through the shoulder-joint for sarcoma.*—Hindu male, *æt.* 23. Admitted with a large tender swelling of the right forearm implicating the skin, of 5 years' duration. Recent growth very rapid. Several small tumours existed in the arm and about the wrist, and some of the axillary glands were enlarged. All the lumps were very painful, and patient was much worn out with suffering. He had nodules of molluscum fibrosum all over the body. The arm was removed through the shoulder joint by Spence's method (large deltoid flap cut from without), the brachial plexus was found matted and thickened and was removed just below the level of the clavicle, and a mass of diseased glands was taken out of the axilla. The wound healed mostly by first intention. Some suppuration took place in the cavity. The patient had recovered sufficiently in 36 days to leave the hospital, but there was a very suspicious fulness of the posterior flap—suggesting recurrence. He has not been heard of since his discharge. Examination of the limb fully confirmed the diagnosis.

7. *Amputation of the thigh for Sarcoma.*—Hindu male, *æt.* 50. Admitted with a soft tumour of eight months' duration, implicating the knee-joint and lower extremity of the femur, which had undergone spontaneous fracture 15 days previously. The growth being evidently malignant amputation was performed at the upper third of the thigh. The wound healed well, but the disease recurred in the pelvis and stump, and patient died of exhaustion 88 days after operation. The tumour was found to be a spindle called sarcoma.

8. *Amputation of both legs for dry gangrene.*—Hindu male, *æt.* 28. Suffered from fever two months ago, followed by swelling of both legs and feet. About a month ago, his feet lost vitality, and blisters, followed by ulceration, appeared above the ankles. The feet are dry and shrivelled and there is a deep sulcus down to the bones about two inches above the ankle-joint, separating the dead parts from the living. The condition is exactly symmetrical, and patient looks as if he had on a pair of black moccasins. The tips of the middle fingers are also gangrenous.

The dead parts were removed by amputation, the operation consisting in constructing flaps out of the surviving tissues with the least possible sacrifice of parts and dividing the bone at a sufficiently high level to admit of apposition of the edges of the flaps. The wound healed mostly by first intention, and the patient was discharged in 55 days, able to get about with crutches and circular boots. The deep dressings—boracic gauze, sprinkled with iodo-form—were not changed in this case for eight days. The right leg healed in 11 days, and the left in 22 days.

9. *Amputation of the leg for gangrene.*—Hindu male, *æt.* 48. Admitted 11th April. Suffered from an inflamed corn four months ago, which suppurated and left a sinus. This gave him no trouble until a fortnight ago, when he got ague and measles, followed by inflammation of the foot, which led to gangrene. On admission the whole foot was found to be gangrenous, and some sinuses at the outside of the ankle-joint led to dead bone. Urine contained albumen. Patient takes 26 grains of opium daily. Has been having low fever with hiccup during the last few days. Looking to the man's constitution and habits, the state of the kidneys and the character of the lesion, it was thought advisable not to amputate. The part was carefully disinfected by bichloride lotion and iodoform and suitable constitutional treatment employed. A line of demarcation formed above the ankle but on the 13th, he had severe bleeding from the foot, followed by a temperature of 104° and prostration and hiccup. Next morning (14th) signs of a return of bleeding being evident and no possibility existing of securing the point in any way in the midst of a gangrenous mass amputation was thought necessary.

The leg was removed above the line of demarcation with the strictest antiseptic precaution. The operation was followed by marked improvement in the constitutional conditions subsidence of fever, disappearance of hiccup, &c. The discharges remained sweet for four days. On the fifth, they were found to be putrid. On the eighth day the wound looked sloughy. On the fourteenth, the bare end of the tibia

protruded; some improvement and attempt at repair took place till the twenty-fourth day, when fever set in, and gangrene of the posterior flap became evident. This progressed upwards, and on the twenty-eighth day, when he was removed in a moribund state, the gangrene had extended as far as the upper part of the thigh.

* * * Amputation was resorted to in this case to save life, which was urgently threatened by severe hæmorrhage. The combination of Bright's disease and excessive opium eating contra-indicated operation, which was undertaken under the pressure of imminent peril to life. It seemed at first as if success would be achieved, but the constitutional depravity finally asserted itself. The case is one of a class not uncommon in Bengal, in which, on account of diabetes, Bright's disease, or excessive indulgence in opium singly or combined, the use of the knife is almost certain to be followed by gangrene.

10. *Amputation of leg for caries of the ankle.*—Hindu male, *æt.* 32. Had been previously operated on unsuccessfully for caries of the tarsus and ankle-joint (see IV. 1. f. i. and III. 3. c.). Amputation was performed by Teale's method. The wound healed kindly in fifteen days. He left hospital 20 days after the late operation.

11. *Amputation of the leg for epithelioma of the foot.*—Hindu male, *æt.* 50. Had gangrene of both feet after fever 25 years age, resulting in spontaneous amputation of the foot between the two rows of tarsal bones (Chopart's amputation.) He hurt the left stump a year ago, and an ulcer formed, which has continued to increase. This ulcer presented on admission the characters

of an epithelioma. Leg amputated above ankle by a short internal and long external flap. The wound suppurated, and part of the outer flap sloughed. Healing took place by granulation and the patient left hospital with a sound stump 75 days after the operation.

12. *Syme's amputation for sarcoma of foot.*—Mahomedan male, *æt.* 32. Disease of three years duration, implicating dorsum of foot; sound heel flap available. Wound remained aseptic and healed kindly. A small sinus at the inner corner of the wound caused some delay. Patient discharged 60 days after operation with a callous and useful stump. No sign of recurrence. Has not been heard of since.

13. *Syme's amputation for caries of the ankle-joint.*—Mahomedan male, *æt.* 35. Had a fall six months ago, followed by inflammation of right ankle. Abscesses appeared over outer and inner ankle in a month, which discharged a good deal of pus. The opening thereby caused and a third which formed subsequently, have persisted up to the present. Bare bone can be felt through them. Amputation performed by Syme's method. Ankle-joint found to be disorganized. Sinuses were scraped out by a sharp spoon. The cavity of the wound suppurated and a counter-opening through the heel flap became necessary. Repair was slow and occupied about five months, at the end of which time the sinus had healed, and patient was discharged with a callous stump which bore the weight of the body well.

14. *Amputation of the penis for sloughing consequent on extravasation of urine.*—Hindi

male, *cet.* 28. Admitted with retention and extravasation of urine. Clock's operation performed (*vide infra*) and free incision, were made into the œdematous scrotum and penis, extensive sloughing took place, and the penis was deeply eaten away thereby. It was consequently removed at the narrowest part. The wound healed by granulation and patient left hospital 16 days after the operation. The urethra was destroyed deeply by the sloughing, and micturition took place through the perineal wound.

* * Excluding the case of amputation of the penis, the general result of the year is fourteen amputations with four deaths. I have excluded amputation of part of the hands and feet from the record, because such cases are in most instances of a trivial character. The death-rate, 28·6, is high, but it will be observed that the fatal results occurred under circumstances where a different issue could hardly be expected. These operations may be tabulated as follows:—

	Hip-joint and thigh.			Knee-joint and leg.			Shoulder-joint and arm.			Elbow-joint and forearm.			Total.		
	No.	D.	P. C.	No.	D.	P. C.	No.	D.	P. C.	No.	D.	P. C.	No.	D.	P. C.
For injury { Primary	..	..	....	..	..	....	2	0	....	1	..	....	3	0	....
Secondary	..	..	....	2	2	100	1	1	100	..	..	....	3	3	100
For disease ..	..	1	100	6	0	....	1	0	....	..	..	....	8	1	12·5
Total	1	1	100	8	2	25	4	1	25	1	..	....	14	4	28·6

The numbers are too small for any profitable analysis.

The method of operation adopted in all but four cases, where Spence's, Teale's, and Syme's special procedures were followed, was what is called the modified circular—oval flaps of equal or unequal length, according to circumstances, composed of skin, subcutaneous and muscular fascia cut from without; a circular or obliquely upward division of muscles at the base of the flaps and division of the bone a little higher up. This is the most convenient and successful method in the great majority of circumstances. Great care was taken in securing exact apposition of the flaps and draining the stump cavity, and strict antiseptic precautions according to the method which will be subsequently described were adopted in all cases.

These were successful in all cases in which it is not otherwise stated.

VI. REMOVAL OF TUMOURS (*by Excision*).

A.—MALIGNANT TUMOURS.

1. *Scirrhus of mamma and axillary glands*.—
i. European, *æ*t. 45. Tumour of left breast of three months' duration. Skin not involved. Nipple not retracted. General health fair. Gland removed by elliptical incisions. Two cancerous glands removed from the axilla. Edges of incision brought together by metallic and horse-hair stitches, and an incision made for drainage in the lower flap. Dressed antiseptically. Wound remained aseptic, and healed by first intention, except about two inches of its centre which was closed by granu-

lation. No constitutional disturbance of consequence. Discharged 21 days after the operation. Returned in a few days complaining of palpitation which was found to be functional, and subsided under treatment.

ii. Hindu, *æt.* 42. Tumour of left breast of two years' duration. Skin involved and nipple retracted. Axillary glands enlarged and indurated. General health fair. Gland extirpated by two elliptical incisions. Axillary glands removed. Wound closed by metallic and horse-hair sutures. Dressed antiseptically, and remained aseptic. Left hospital with a sound cicatrix fifteen days after the operation.

iii. Hindu, *æt.* 56. Scirrhus of right breast of five months' duration. Skin implicated. Nipple retracted. Axillary glands diseased. A few enlarged and indurated glands also above clavicle. An incision about two inches long was, in the first instance, made above the clavicle parallel to the sterno-mastoid for the purpose of, if possible, removing the diseased supra-clavicular glands. These glands were taken away by means of the finger, and no more were felt. The breast was then removed including the skin covering it. The axilla was thoroughly emptied of glands. Several small hard glands were found beneath the clavicle and between the pectoral muscles. A curved incision was made below the axilla to permit of the transplantation of skin upwards and forwards to fill the large gap caused by the free removal of skin. A drainage tube was carried under the clavicle from the neck wound to the lower angle of the axillary wound, and the whole dressed

antiseptically with great care. The wound remained sweet for three days, then putrefied. Suppuration took place, and high fever and diarrhoea ensued. Pronounced symptoms of septicæmia of a severe type set in on the twelfth day, and patient was removed in a moribund state fourteen days after the operation.

* * This was a very severe operation; but there is every reason to think that the case would have done well had the wound remained aseptic.

The wound probably became septic in consequence of the movements of the head disturbing the upper portion of the dressing. Efforts were made by means of injections to extirpate putrefaction, but without avail.

iv. Eurasian, *æt.* 40. Tumour of left breast noticed two months ago. Skin not adherent; axillary glands enlarged and indurated; general health delicate. Mamma removed by elliptical incisions including nipple. Several diseased glands removed from axilla. Edges of wound brought into accurate contact, and a hole made in the lower flap for drainage. A small portion of the lower flap sloughed at the centre of the wound and some suppuration took place around it. The rest of the wound healed by first intention. The drainage tubes were gradually shortened. Left hospital 31 days after operation with the wound nearly healed.

v. Hindu, *æt.* 30. Cancer of the right breast of 11 months' duration; skin involved; axillary glands enlarged and indurated. Breast extirpated together with the skin covering it. Axilla thorough cleared. A large flap was taken from the side of the chest and moved upwards and

inwards to fill up the wound. It was stitched with catgut, and two triangular gaps left on each side to heal by granulation. Wound remained aseptic. Flaps contracted adhesions and the intervals between them healed by granulation. Patient remained in hospital 80 days.

2. *Removal of recurrent cancerous glands.*—

i. European male, *æ*t. 55. Had been operated on for epithelioma of tongue (see *e*, *i*, below). A gland situated beneath the left sterno-mastoid became enlarged and was enucleated on the 11th of February. The wound healed within a week.

ii. Same case. Another gland beneath the same muscle, lower down, underwent enlargement and was extirpated on the 20th of March; the wound healed rapidly, but the disease recurred at the root of the neck beyond reach of operation. He left the hospital on the 23rd of April.

3. *a. Epithelioma of the Scalp.*—Hindu female, *æ*t. 45. Had a tumour of the occiput from childhood, which attained the size of a foetal head and was removed eight months ago. It has recurred and presents the appearance of a large cauliflower excrescence. It was removed together with a liberal margin of sound scalp. The tumour was adherent to the occipital protuberance which was chipped off with a chisel. The wound remained aseptic and healed by granulation. She remained in hospital 70 days, and on her discharge no sign of recurrence was observed. She has not been heard of since she left hospital.

b. Epithelioma of the nose and face.—Hindu

male, *æt.* 45. A small nodule appeared at the tip of his nose four months ago, which rapidly increased and spread until the disease involved the whole of the upper lip, whole of the nose as far as the bridge, and the adjacent cheek to some extent. The tumour presented the characteristic signs of epithelioma. It was isolated by two incisions starting from the angles of the mouth and meeting over the nasal bones. The growth was undermined and removed, leaving the patient without an upper lip and nose. Symmetrical flaps were cut from the cheek to supply their place and stitched together in the middle line. Some diseased glands were also removed from below the jaw. Patient got high reactive fever. Diarrhœa set on on the third day, and he died of exhaustion 60 hours after the operation.

c. Epithelioma of the cheek.—Hindu female, *æt.* 50. Was in the habit of chewing lime and tobacco leaves since the age of nine; noticed a growth on the inside of the right cheek $1\frac{1}{2}$ years ago. It now extends from the angle of the mouth to the level of the last molar, and from about an inch below the upper alveolus to the lower, which is to some extent implicated. Tongue and floor of mouth healthy. Cheek divided by an incision curving from angle of mouth outwards and downwards. Growth isolated and removed by division of buccal mucons membrane. One tooth extracted and gum of lower jaw removed together with subjacent alveolar process; a diseased gland removed from below angle of lower jaw. Wound carefully stitched. It healed by first intention in 14 days. Patient

left hospital 27 days after operation. No sign of recurrence.

d. *Epithelioma of lower lip*.—Eurasian male, *æt.* 37. Observed a growth of the right side of the lower lip three years ago. During the last month the right submaxillary gland has been undergoing enlargement. The growth now occupies the right half of the lower lip, and the right submaxillary gland is large and indurated. The right half of the lip was removed by a V shaped incision, and the submaxillary gland enucleated through a straight incision. Both wounds were carefully stitched and healed by first intention. He left hospital 22 days after the operation. Some induration remained in the submaxillary region. He was subsequently readmitted with a recurrence of the disease (See *f, i* below).

e.—*Epithelioma of the tongue*.—

i. European male, *æt.* 55. About 10 years ago noticed a small growth on the tongue which was said to have been cured by a Persian physician. Two years ago this growth re-appeared, and has been extending ever since. He suffered from syphilis in youth, and under the impression that the growth was syphilitic, he was treated with large doses of iodide of potassium without avail. The left side of the tongue is occupied by an indurated sloughy ulcer which extends from the tip to the anterior pillar of the fauces, which is implicated. The left sublingual gland is enlarged and indurated. Total extirpation of the tongue was performed on the 8th of January. The floor of the mouth was divided externally in the middle line by an incision extending from the

symphysis to the hyoid bone. Two needles were passed from this wound beneath the lingual artery and brought out below the angle of the lower jaw; the tissues between the surface and the needles being compressed by an elastic cord passed round the projecting ends. The deep attachments of the tongue were then separated by the finger and divided with scissors. The left sublingual gland was removed, and the operation completed by the ecraseur. A drainage tube was placed in the submental wound and the parts freely sprinkled with iodoform. The wound healed slowly by granulation, and was soundly cicatrized. Patient was able to talk very distinctly and retained some sense of taste being able to distinguish salt from sugar.

The disease subsequently recurred in the glands of the neck, and two operations were performed for their extirpation on the 11th of February and 20th March (see 2 i, ii, above). Recurrence again took place beyond reach of operation and he finally left hospital on the 23rd of April.

ii. East Indian female, *æt.* 72, admitted with a warty growth on the right side of the tongue about the size of a hazel nut of five months' duration. The growth was removed by curved scissors and the edges of the wound stitched with catgut. It healed in 7 days, and patient left hospital 13 days after the operation.

Recurrence subsequently took place in the cervical glands situated beneath the right sternomastoid. (See *g*, below).

f.—Epithelioma of the lower jaw.—

i. Eurasian male, *æt.* 37, had undergone

operation for cancer of the lower lip and submaxillary gland. (See *d*, above.) Readmitted one month after the operation with a hard rapidly growing lump in the right submaxillary region; skin infiltrated. A triangular piece of skin was removed with all the morbid material underlying it, including the lower border of the lower jaw to which it adhered. The dissection was deep and difficult. The wound was closed by flaps taken from the neighbourhood. It did well, but recurrence again took place in the neck and cheek, and patient declining further operation, which indeed was not pressed, left the hospital 55 days after the last operation, and was subsequently reported to have died.

ii. J. C., aged 30, an Englishman, and engine-driver by occupation, was admitted on the 11th of November 1886. In the preceding January he had had an operation performed for cancer of the lower lip. He remained well till August when a swelling formed beneath the chin which gradually increased, and finally burst, leaving an open sloughy sore with an extensive and deep indurated base.

On admission, the disease was found to involve the lower lip, chin and lower jaw, and extend down the front of the neck as far as the episternal notch. The man was fairly nourished, but suffered from bronchitis. The larynx was found to move up and down during deglutition, and no enlarged gland could be detected. At the patient's urgent entreaty an operation was performed. The central half of the lower lip was isolated by vertical incisions which were carried to the angles of the lower jaw, and

along the anterior borders of the sterno-mastoids as far as the episternal notch where they met. The lower jaw was divided at the angles, and the whole of the tissues included in the incision removed down to the surface of the larynx. Both submaxillary and sublingual glands were taken away, and the body of the hyoid bone, which was eroded, removed. The operation was of a very formidable character, and some 60 vessels had to be ligatured. The edges of what remained of the lower lip were brought together. Laryngotomy was found to be necessary owing to the falling back of the tongue and epiglottis. The wound was sprinkled with iodoform, and dressed with boracic gauze. Patient was fed at first per rectum, and then by a funnel and tube passed into the œsophagus. The parts gradually healed. The lower lip adhered, and the wound on the front of the neck underwent granulation, cicatrization and contraction. Patient was taught to feed himself, and improved greatly in general health. He continued to wear the tracheal tube; but was able to walk about the hospital grounds. About two months after the operation, infiltration of the skin was observed at a little distance from the wound on either side.

These lumps have extended and ulcerated, and are now rugged sloughy open sores set on a deep, hard, extensive base exactly resembling that which existed on his chin when he was admitted. He is emaciating, and the end is not far off. (Died 31st May).

g.—Epithelioma of the neck (recurrent). — Patient had undergone an operation for cancer

f the tongue (*e ii*) on the 28th of April. In the middle of August she noticed a swelling below the right ear which has been gradually increasing. It is about the size of an orange, not red and tender, and movable. On the 23rd of October an attempt was made to remove the tumour; but it was found to embrace the carotid artery and internal jugular vein, and the operation was not completed. As much of the cancerous material as had broken down was scraped away, and the wound left open and dressed antiseptically. Patient lived for 52 days; the tumour increased and fungated, and death was due to exhaustion.

h.—Epithelioma of the penis and inguinal glands.—Hindu male, *æt.* 32. The disease appeared eight months ago. The glans and prepuce are involved and the inguinal glands on both sides. The penis was removed by Hilton's method, the corpus spongiosum being cut half an inch longer than the corpora cavernosa, slit on the ventral aspect and attached to the lower angle of the wound by a few horse-hair sutures. The inguinal glands were extirpated by incision parallel to Poupart's ligament; they were beginning to break down. The penis healed well, but recurrence took place in the groins. Patient lived for 38 days, and died of exhaustion due to fever and diarrhœa. The fever existed prior to the operation and persisted to the end. The diarrhœa set in 20 days before death and proved uncontrollable.

* * The foregoing record of 17 operations for cancer, concerns 13 cases; two patients having undergone a second operation and one

patient two secondary operations for recurrence. Two of the patients had moreover been subjected to a primary operation before admission. Of the 13 persons, 4 died in hospital, 2 left hospital in a hopeless state, 1 is still in hospital in a dying state, and 6 recovered and left hospital without any sign of recurrence. Four of these were cases of scirrhus of the breast, in which a thorough removal of axillary glands was resorted to in addition to extirpation of the mamma and free removal of the affected skin. The record is a melancholy and disheartening one. In the cases in which recurrence occurred, this took place in all but one instance in the nearest lymphatic gland. The experience of the year reiterates the old lesson, that the only hope of success in operations on cancer consists in very liberal ablation of tissues in the vicinity of the disease and the careful removal of suspicious glands in the neighbourhood. Even when these measures have been adopted with an unsparing hand the result is too often disappointing and disastrous.

4. a.—*Excision of Sarcoma of the left Upper Jaw.*—Hindu male, *æt.* 19. Five months ago a swelling of the left upper jaw was noticed which has rapidly increased in size. It involves the whole of the left superior maxilla and part of the malar bone. The eye is not displaced, but there is a large bulging of the alveolar and palate processes into the mouth. The whole of the left upper jaw bone and malar were removed in the usual manner. Ferguson's method of dividing the skin was followed

The wound was accurately closed by horse-hair stitches, and the cavity stuffed with boracic lint sprinkled with iodoform. The skin wound healed by first intention, and patient left hospital 24 days after the operation with a sunken cheek and a hole about $\frac{1}{2}$ an inch in diameter in the roof of the mouth. He returned a few months afterwards with a recurrence of the tumour in the angular process of the frontal bone and roof of the orbit. A second operation was not considered feasible.

b.—Sarcoma of the hard Palate.—Hindu male, *æt.* 35. Soft tumour of hard palate involving also the alveolar processes of both superior maxillæ as far as the bicuspid teeth; of five months' duration; very vascular and ulcerated on the surface, bleeding profusely. The upper lip was divided in the middle line and the incision carried into the nostrils. The soft parts were raised off the surface of the tumour, and the soft palate divided horizontally. The cartilaginous septum of the nose was divided, and central portions of the upper jaw together with the tumour removed by means of a bone forceps. A good deal of blood was lost. Patient died of shock in six hours. The tumour was found to be a small round-celled sarcoma.

c.—Sarcoma of the shoulder.—Mahomedan male, *æt.* 50. Had a tumour removed from the top of the right shoulder seven years ago. It reappeared six months ago, and has attained the size of a hen's egg. It is freely movable, is soft and fluctuating and has been bleeding for the last few days. It was removed with a liberal margin of adjacent skin, and a flap was taken

from the shoulder to cover the wound. Repair was satisfactory, and patient left hospital with a sound cicatrix in 33 days. The tumour was found to be a spindle-celled sarcoma.

d.—*Sarcoma of the Arm.*—Hindu male, *æt.* 27. Tumour of middle head of left triceps of three years' duration, skin not implicated. It was exposed by a longitudinal incision and thoroughly removed together with the long head of the triceps. The wound healed by first intention, and patient left hospital 19 days after the operation. He has not been heard of since.

e.—*Sarcoma of Back.*—Hindu male, *æt.* 30. Had been operated on two years ago for a tumour of the back of about six years' duration. The growth soon recurred and it is now 4 inches long by 2 inches broad, soft fungating but movable; situated between the spine and right scapula. It was removed together with a free margin of adjacent skin and liberal amount of subjacent tissue. The wound healed by granulation in 63 days.

f.—*Sarcoma of the Buttock.*—Eurasian female, *æt.* 52. Noticed a tumour on the right gluteal region 9 months ago, which was removed five months ago. Another tumour had grown on the scar. It is about the size of a pigeon's egg, and involves the skin and subjacent fascia. It was removed together with a liberal margin of surrounding tissue. The wound healed by granulation in 40 days.

B.—NON-MALIGNANT TUMOURS.

i. *Elephantiasis of the Scrotum.*—i. Hindu, *æt.* 21. Had a suppurated hydrocele twelve

years ago. Scrotum began to enlarge four years ago. Tumour removed by the method referred to below; weighed 7 lbs. 10 oz. after removal. Wound remained aseptic; deep dressing removed after 14 days. Remained in hospital 74 days.

ii. Hindu, *æt.* 40. Two years' duration. Tumour removed as usual; weighed 2 lbs. 2 oz. Wound remained aseptic; deep dressing changed after 12 days. Left hospital 51 days after operation.

iii. Hindu, *æt.* 25. Six years' duration. Usual operation. Tumour weighed 5 lbs. 9 oz. Wound remained aseptic, and healed in 59 days; deep dressing removed in 16 days.

iv. Hindu, *æt.* 43. Small tumour of four years' duration. Health good. Usual operation. Weighed 12 oz. Wound remained aseptic. Left hospital in 49 days.

v. Mahomedan, *æt.* 35. Tumour of two years' duration. Health good. Excised in the usual way. Weighed 1 lb. 1 oz. Wound remained aseptic. Left hospital 84 days after operation.

vi. Hindu, *æt.* 50. Scrotal tumour of four years' duration. Has had hydrocele for 15 years. Legs also elephantoid. Suffering from fever. Addicted to hemp. On subsidence of the fever, the tumour was removed in the usual manner. An abscess existed in the right side of the scrotum. Severe fever set in on the evening of the second day, and lasted for two days, when the temperature became subnormal and patient became weak and delirious. Prostration ensued, and death by exhaustion occurred six days after the operation. The wound re-

remained aseptic. A *post-mortem* examination could not be obtained.

vii. Mahomedan, *æt.* 39. Tumour of twelve years' duration. Health good. Usual operation. Weighed 2 lbs. 8 oz. Wound remained aseptic. Left hospital 62 days after operation.

viii. Hindu, *æt.* 30. Small tumour of one and a half year's duration. Health good. During the operation an unobliterated processus vaginalis was found on the right side. It was isolated, tied at the external ring, and the remainder removed. The operation was completed in the usual way. An abscess formed on the right side, which was opened in the groin and drained. The wound healed by granulation, and patient left hospital 62 days after the operation.

ix. Mahomedan, *æt.* 40. Has suffered from hydrocele for 15 years. The scrotum has undergone thickening of late with periodical attacks of fever. Health good. The thickened skin was removed in the usual way, the hydrocele emptied, and the redundant tunicae pared off. The testes were stitched in pockets. Wound remained aseptic. Left hospital 62 days after operation.

x. Hindu, *æt.* 40. Scrotal tumour of ten years' duration. Health good. Removed in the usual manner. Weighed 3 lbs. 15 oz. Wound remained aseptic. Left hospital 59 days after operation.

xi. Hindu, *æt.* 25. Small tumour of two months' duration. Health good. Inguinal glands on both sides enlarged and breaking down. Tumour removed by the usual operation. Weighed 1 lb. 15 oz. Inguinal glands extir-

ated. Wound remained aseptic, and healed by granulation. Left hospital in 53 days.

xii. Hindu, *æt.* 38. Scrotal tumour of three years' duration. Health good. Operation as usual. Large hydrocele containing 16 oz. of fluid on right side. Tumour weighed 8 lbs. The edges of the flaps covering the testes sloughed to a slight extent. The sloughs separated and wound healed by granulation. Left hospital 65 days after operation.

xiii. Mahomedan, *æt.* 25. Scrotal tumour of four years' duration with right inguinal reducible hernia. Health good. The tumour, which weighed 13 oz., was removed in the usual way, and the sac of the hernia was then isolated, tied at the neck, and removed. The pillars were brought together by catgut. Suppuration took place in the hernial wound, and a small abscess also formed in the perinæum. With these exceptions, repair proceeded in a favourable manner, and patient left hospital quite cured of both tumour and hernia in 65 days.

xiv. Mahomedan, *æt.* 40. Tumour of two years' duration. A few lymphatic vesicles on the surface; double hydrocele. Health good. Operation as usual. Weighed 1 lb. 7 oz. Wound remained aseptic and healed in 70 days.

xv. Eurasian, *æt.* 35. Had a small scrotal tumour removed in 1880. Underwent an operation shortly afterwards for adhesion of the under surface of the penis to the cicatrix. Had a small lymph-scrotum removed in 1885. This healed soundly, but the skin on each side of the scar has again become spongy and hyper-trophied. This skin was thoroughly removed

by an elliptical incision, and the edges stitched. The wound remained aseptic and healed in 38 days.

xvi. Hindu, *æt.* 35. Tumour of eight months' duration. Development accompanied with periodical fever. Health good. Usual operation performed. Large hydrocele on right and small on left side; tumour weighed 1 lb. 10 oz. Wound remained aseptic and healed in 72 days.

xvii. Hindu, *æt.* 45. History of two attacks of gonorrhœa, the last four months ago, followed by swelling of the scrotum. Meatus urinarius contracted and glands indurated. The meatus was slit open, and a No. 12 catheter easily passed into the bladder. The glans was removed, and the tumour excised in the usual way. It weighed 1 lb. The wound healed kindly, and patient left hospital 49 days after operation.

xviii. Hindu, *æt.* 28. Very large tumour of five years' growth, engorged with blood and serum and covered with gangrenous patches. Suffering from high fever. Evening temperature 103° . The fever abated under treatment, the gangrenous patches sloughed off, and an operation was performed six days after his admission in the usual manner. The tumour weighed 31 lbs. and both tunicae contained fluid. The wound was a large one and underwent putrefaction on the third day. It became aseptic in a week; during this period there was considerable fever, temperature ranging from 99° to 103° . Repair took place by granulation, and patient left hospital 75 days after the operation.

xix. Hindu, *æt.* 40. Scrotal tumour of seven years' duration. Health good. Usual operation. Right tunica contained 6 pints and 2 oz. of fluid. Tumour weighed 8 lbs. 4 oz. Wound got foetid on the sixth day, and some sloughs formed on the surface. There was slight fever at this period. About 35 days after the operation patient got an attack of acute eczema all over his body which was thought to be due to the bichloride of mercury. Iodide of potassium was administered internally, and boracic dressings substituted for the bichloride. The eczema disappeared and patient left hospital quite well 64 days after the operation.

xx. Hindu, *æt.* 38. Got acute hydrocele six years ago. Both tunicae tapped and injected a year afterwards. Since then the scrotum has undergone enlargement with periodical fever. Spleen enlarged; has fistula in ano. Consumes five grains of opium daily. Tumour removed in the usual way; weighed 12 lbs. 2 oz. Wound remained aseptic, and recovery took place in 53 days.

* * * The operation in these cases was performed according to the plan minutely described in a clinical lecture which was published in the issue of the *Indian Medical Gazette* for November 1882 and reproduced in my work on "Operative Surgery in the Calcutta Medical College Hospital." The parts were rendered and kept aseptic by the free use of a bichloride of mercury lotion (1 to 2000), and the wound was peppered with iodoform and carefully covered with boracic gauze before the outer-dressing, consisting of coarse gauze (bandage cloth)

soaked in bichloride and glycerine (1 to 500) was applied. On removal of the outer-dressing, the gauze received a fresh sprinkling of iodoform and was left *in situ* for from 10 to 14 days. When removed, the wound was found in full process of aseptic granulation. These measures kept the wound aseptic and free of suppuration in all but a few cases, and in these the putrefaction and suppuration were partial.

The tumours were mostly small and the subjects healthy. The mortality (5 per cent.) was very favourable. The single fatal case was that of an elderly man whose health had been shattered by debauchery, and who succumbed from the shock of the operation and the subsequent reaction, causing prostration and exhaustion.

b. *Elephantiasis of the labia*.—Hindu, *æt.* 25. Suffered from double bubo a year ago and both labia began to swell about a month ago. The labia were removed by elliptical incisions, the edges of which were brought together by catgut and healed in 25 days.

2. i. *Lipoma of the thigh*.—Hindu male, *æt.* 18. The tumour of 12 years' growth occupies Scarpa's triangle (right side), displacing the femoral artery outwards. It is about the size of an apple, and freely movable. A straight incision exposed it, and it was easily shelled out. The wound remained aseptic and healed in 31 days.

ii. *Lipoma of the groin*.—Hindu male, *æt.* 24. Large tumour of seven years' duration extending from Poupart's ligament to about 2 inches below the umbilicus on the right side, lobulated and freely movable. It was exposed by a

straight incision, and shelled out without difficulty. Wound remained aseptic and healed by first intention. Patient left hospital in 34 days.

3. *Simple Epulis of lower jaw.*—Hindu male, *æt.* 16. The tumour began to grow six months ago and occupies the left alveolus, corresponding to the incisor and canine teeth. History of fall three years ago. Five teeth were extracted and the growth together with the subjacent gum and bone removed. Bleeding stopped by cantery. The wound healed kindly and patient left hospital in 11 days.

4. *Naso-pharyngeal polypus.*—Mahomedan male, *æt.* 21. Noticed a growth in left nostril two years ago. It now protrudes from the nostril which is much expanded and displaces the soft palate forwards. It is very hard, and there is a muco-purulent discharge from the nostril. The nose was slit open, exposing the chamber of the left nasal fossa. The chain ecraseur was passed round the growth and part of it removed. The remainder was avulsed with a pair of necrosis forceps. The fossa was stuffed with boracic lint and the nose carefully stitched. A good deal of blood was lost. The nose healed by first intention and the cavity by granulation. It was regularly washed out with Condyl's fluid. A few maggots came out of it for a few days, but they disappeared under the use of iodoform. Left hospital perfectly well 37 days after the operation.

5. *Cystic tumour of the lower jaw.*—i. Hindu male, *æt.* 26. Tumour commenced seven years ago. Implicates the whole of the right

half and the body of the left half of the jaw. Tongue secured by a cord. Lower lip divided in the middle line and the incision carried downwards and to the right over the most prominent part of the mass where the integument was much stretched and thinned. Flaps reflected from outer surface of tumour; jaw divided at level of second molar tooth on left side, and removed by disarticulation on right side. Lip and wound carefully stitched. The lip healed by first intention and most of the wound. Patient left hospital quite recovered 57 days after the operation. Tumour weighed 2 lbs. 2 oz. It was an osteo-cystoma.

ii. Hindu female, *æt.* 40. Tumour of two years' duration, involving the left half of the body of the lower jaw and extending beyond the symphysis to the right side. Two sinuses, the result of recent suppuration, entered the body of the tumour from outside (suppurated cysts). A straight incision was made from the left angle of the mouth, the flaps dissected off and the jaw divided at the level of the 1st bicuspid tooth of the right side and through the angle of the left. The wound was carefully stitched and healed by first intention. Recovery was delayed somewhat by bagging of matter beneath the divided angle which was bare, and a free counter opening had to be made. She left hospital quite well 89 days after the operation. Tumour weighed 1 lb. 2 oz. It was an osteo cystoma.

* * * Contrary to custom the lip was divided in both these cases. The tumours were very large and the skin considerably thinned. Divi-

tion of the lip facilitates the dissection, the division of the jaw and the seizure of bleeding points : and if the wound is carefully stitched, no deformity or inconvenience results. A large drainage tube was inserted in both cases into the lower angle of the wound. This fulfils an important purpose by preventing the accumulation of septic material in the floor of the mouth. It also permits more thorough washing out of the wound cavity.

5. *Warty tumour of the penis.*—Hindu, *et.* 23. The mucous membrane lining the prepuce and covering the glans is covered with a crop of large warts forming a continuous mass, whose base is surrounded by considerable thickening. The growth of the warts followed an attack of gonorrhœa five months ago ; the prepuce cannot be retracted and a foul purulent discharge issues from the preputial orifice. The preputial cavity was slit open, and the prepuce entirely removed ; the warts were also dissected off the surface of the glans. Some recurrence took place during the healing of the wound, and a second operation was necessary. Perfect recovery eventually took place. Patient remained in hospital 58 days.

6. *Removal of piles.*—In these three cases the piles were isolated by means of Smith's clamp and removed by strong curved scissors, the cut surface being seared with Paquelin's cautery. The operation was facilitated by cutting the skin and mucous membrane surrounding the pile with scissors before applying the clamp.

A satisfactory result was obtained in all the cases.

VII. *Removal of foreign body from the cheek.*—Mahomedan male, *æ*t. 45, admitted with a sinus of the right cheek and complete inability to open his mouth. Nine months ago a pistol, with which he had been amusing himself, burst, and a fragment of the barrel caused the wound in his cheek. This was stitched and dressed, but after prolonged treatment failed to close. On probing the sinus a hard body was felt, and when the sinus was freely laid open under chloroform, a piece of the barrel of the pistol $3\frac{1}{2}$ inches long, $\frac{1}{2}$ inch broad and $\frac{1}{8}$ inch thick was extracted. It was bent on itself at its outer end, and the inner extremity projected into the pharynx behind the anterior pillar of the fauces. On extraction of the foreign body the mouth was fully opened by a screw-gag and the wound stitched after a drainage tube had been inserted. The wound healed in a month, but some difficulty was experienced in keeping the mouth open. The screw-gag had to be used frequently, and he was retained in hospital for 84 days. He was taught to apply the screw-gag and when he left he could open his mouth to the extent of about $1\frac{1}{2}$ -inch.

VIII. REMOVAL OF CALCULI.

1. *Urethral Calculus removed by incision.*—Mahomedan male, *æ*t. 25, a boatman by occupation, sustained an injury of the perinæum 6 years ago, which was followed by bleeding from the urethra and difficulty in micturition. This latter has persisted; and about three months ago he had fever, followed by swelling of the perinæum and scrotum. On admission, the

perinæum was found to be hard and swollen, and in front of this swelling another larger soft fluctuating swelling projected between the testes, distending the scrotum. The prostate gland was found to be healthy, and he could make water in narrow jets sufficiently to empty his bladder. An attempt was made to pass a catheter, but a very tight stricture was found to exist about three inches from the meatus. The scrotal swelling was punctured with a fine trocar. Urine escaped through the canula with fine calculous sand. When the cyst was emptied of fluid, it was found to contain a large quantity of calculous material. The patient was now chloroformed, and the cyst laid freely open in the middle line. About an ounce of calculous gravel and sand, composed, it was afterwards found, of urate of ammonia and phosphate of lime, was removed by a lithotomy scoop. The distant end of the urethra projected into the cyst as a nipple-shaped process about one inch long at the apex of which a minute opening existed. This was enlarged by incision, and a No. 12 catheter finally carried into the bladder, which was found to be empty. The cyst cavity was washed out daily, and a No. 12 catheter passed every third or fourth day. The cyst contracted, and the wound healed; and he left hospital in two months, able to make water in a good stream.

* * * This is a very rare termination of a very severe rupture of the urethra. The cavity of the rupture appears to have been gradually converted into a cyst in which urine lodged, and where a process of precipitation of urinary

salts took place. The isolated and contracted urethral orifice dipped into this cyst and removed by a slow and jerky process the surplus fluid. The plan of treatment adopted was sufficiently obvious and succeeded well; but it is more than probable that the strictured condition of the urethra will recur.

2. *Vesical calculus removed by suprapubic lithotomy.*—Hindu male, æt. 35. Has suffered from symptoms of stone for two years, and on two occasions passed small calculi. A large stone was readily detected by the sound and also felt per rectum. It was also felt above the pubis and seemed to be encysted in the orifice of the left ureter. The rectum was thickened and somewhat contracted in calibre, apparently from syphilis, though this was denied. The distinctness with which the stone could be felt through the abdominal wall and its position led me to elect suprapubic lithotomy. The urine was turbid, alkaline, and contained an excess of mucus and phosphates.

Owing to the state of the rectum, no attempt was made to distend it. Eight ounces of bichloride of mercury lotion (1 in 4,000) were injected into the bladder after it had been emptied by means of a catheter; and a tape was tied round the penis to prevent the escape of the fluid.

A vertical incision, about three inches in length was made above the pubic symphysis. The muscles were cautiously separated, and the surface of the bladder reached by scraping upward with the nail of the forefinger from behind the symphysis.

When the surface of the bladder was laid fully bare, it was steadied by a sharp hook, trans-fixed, and divided in the middle line by a scalpel, from above downwards.

The stone (phosphatic) was found to be very friable, and broke down under the forceps into several fragments, which were removed, and the bladder thoroughly washed out. It was found to be fasciculated and pouched.

A soft catheter was tied in, and a large drainage tube inserted through the wound, which was not stitched. The catheter was removed in 24, and the tube in 48 hours. Urine was allowed to escape by the wound, being caught by a vessel as the patient lay on his side. The bladder was washed out daily with glycerine of borax lotion (dr. i to oz. i). For a month the urine escaped entirely through the suprapubic wound. As the wound contracted, the discharge took place in increasing quantities through the urethra. No symptom causing any anxiety arose during his convalescence; and his health was greatly improved by diet and tonics. He was discharged 62 days after the operation. The fragments weighed 14 drams.

* * * This calculus could doubtless have been removed by lateral lithotomy or litholapaxy, but I feel convinced that suprapubic lithotomy was the safest and easiest method of dealing with it. I have repeatedly convinced myself by operations on the dead body that the peritoneum can easily be displaced upwards with the forefinger and the bladder opened without difficulty or danger. In this case rectal distension was impossible.

3. *Vesical calculi removed by litholapaxy.*—i.

Native Christian male, *æ*t. 40. Has had symptoms of stone for six months. A small calculus detected; urine ammoniacal: no albumen. The stone was crushed, and the fragments evacuated the lithotrite and evacuator being twice inserted. The debris (uric) weighed 38 grains. He suffered from epididymitis, orchitis, and scrotal abscess and had an attack of chicken pox. This caused his detention in hospital for 20 days. He was finally discharged quite free from urinary distress.

ii. C. H. D——, American, *æ*t. 71, a feeble, wasted, very nervous and irritable old man. Had suffered for years from frequent and painful micturition and prolapsus of the rectum. A stone was detected, and the operation of litholapaxy performed. The crusher had to be introduced ten times. The debris weighed 1oz. 6 drs. A morphia suppository was introduced into the rectum. The temperature rose rapidly, and he became extremely restless and delirious. He made water thrice. After seven hours the temperature began to fall and symptoms of prostration set in. He died of asthenia twelve hours after the completion of the operation.

* * * The shock of the operation was too much for this frail old man, whose system had been worn out by prolonged torture and want of sleep. The symptoms were those of "urethra fever" of a severe type.

iii. Mahomedan male, *æ*t. 60. Symptoms of two years' duration. A stone, weighing 3 drams and 20 grains, composed of uric acid, calcium oxalate, and traces of phosphates, crushed and evacuated by two introductions. Patient left hospital quite well nine days after the operation.

iv. Hindu male, *æ*t. 42. Symptoms of 1 year's duration. Small stone weighing 30 grains, composed principally of calcium oxalate. Two crushings. Left hospital next day.

v. Mahomedan male, *æ*t. 35. Symptoms of two years' duration. Debris weighed 1 dr. 40 grs., mainly oxalic; six introductions. Left hospital in 19 days.

IX. 1.—*Tracheotomy.*

i. Mahomedan male, *æ*t. 44. Admitted with edema of soft palate and fauces, swollen cervical glands, discharge of pus and sloughs from the nose and imminent suffocation. Tracheotomy performed by the Resident Surgeon with temporary relief. Died of exhaustion two hours after the operation.

ii. Hindu male, *æ*t. 25. Syphilitic laryngitis causing extreme dyspnœa. Trachæa opened above the isthmus, and a canula inserted. Under treatment (Iodide of potassium, blisters, &c.), the swelling of the neck disappeared, but the tube could not be dispensed with. After $4\frac{1}{2}$ months' residence in hospital, he was provided with a silver canula and discharged in good health. Some air passed into the mouth when the canula was closed, and he could talk in a weak raucous way; but the canal was insufficient for breathing.

iii. Mahomedan male, *æ*t. 35. Great difficulty of breathing caused by cancer of the larynx. Could hardly swallow on account of the fits of dyspnœa excited by the act of deglutition. Trachæa opened above the isthmus. Great relief obtained as regards both breathing and swallowing. Left hospital, wearing a canula, 38

days after the operation, and has not been heard of since.

iv. European child, aged three years. Case of diphtheria with imminent suffocation. Trachæa opened above the isthmus by the Resident Surgeon. The child sank ten hours afterwards.

v. Hindu male, *æt.* 7. Difficulty of breathing caused by sarcoma of the pharynx. The trachæa was opened just below the cricoid cartilage. Relief was immediate. He was removed by his friends, wearing a cannula, in 27 days. The tumour and cervical glands continued to grow rapidly.

vi. Hindu male, *æt.* 6. Case of diphtheria causing dyspnœa. Lived for two days after the opening of the trachæa. Died of diphtheria.

vii. Hindu male, *æt.* 30. Great difficulty of breathing caused by syphilitic larynx. Neck brawny. Patient extremely feeble. Trachæa opened below isthmus. The swelling of the neck disappeared under treatment (Iodide of potassium and ung. hydrarg. Ciniod. locally) and the cannula was removed in 14 days.

A full-sized bougie was passed through the glottis from below upward and encountered no resistance. The wound closed in 48 days and patient left hospital in 51 days in good health, and able to speak distinctly and breathe freely.

* * Life was undoubtedly saved in two of these cases (ii and vii) and prolonged in two others (iii and v). In the remaining three cases two of diphtheria and one of ulcerated sore throat, temporary relief was conferred, but the patients died of the diseases.

2.—*Cholecystotomy.*

East Indian female, *æt.* 32, admitted 26th March. During the last two years suffered from frequent attacks of hepatic colic, about a year and a half ago passed a bile stone. A distinct tumour was discovered on admission above and to right of the umbilicus projecting from the under surface of the liver, globular in form and very tender on pressure. Bowels costive, general health good. Soon after admission, she had a severe attack of fever and jaundice with increased tenderness of the tumour. This subsided under treatment (smart purgation with calomel and administration of antispasmodics and anodynes).

The tumour was proved to be the gall bladder, by puncturing it with a hypodermic syringe and removing a few drops of bile. A longer needle was subsequently introduced and imparted a sensation of calculi. In view of the serious attacks she had undergone, and the diagnosis of a gall bladder filled with calculi, and the persistent pain, the operation of opening the gall bladder and removing the calculi was recommended and consented to.

On the 17th of April, the gall bladder was cautiously exposed under strict antiseptic precautions. It was found to be adherent to the abdominal wall, greatly thickened and contracted, its cavity converted into pockets containing masses of inspissated bile and numerous small calculi. About a dozen of these were removed with the scoop-end of a director, the edges of the divided bladder were stitched to the wound, a large drainage tube inserted, and

the wound stitched and dressed antiseptically. She remained free from fever for three days, but suffered from nausea, vomiting and flatulent distension of the abdomen. On the evening of the 20th, the temperature suddenly rose to 103.6° and she got jaundice and delirium. These conditions increased in severity, and she died of exhaustion on the evening of the 24th. The wound remained aseptic. No bile issued from it until about four hours before her death, when a very copious flow occurred. No *post mortem* examination could be obtained.

3. *Operations for strangulated hernia.*

i. Hindu male, *æt.* 42, admitted with strangulated right inguinal hernia. No history could be obtained, as the patient was of defective intellect. Hard, tender, dull swelling of right scrotum; tongue dry; pulse rapid and weak; no stool for several days. About 18 oz. of sanguineous serum were removed from the scrotum by tapping. Taxis was then tried without effect. The sac was laid open; the contents consisted of a coil of highly congested and ecchymosed small intestine, bathed in sanguinous fluid, and in a state of incipient inflammation. The intestine was returned, the sac dissected out, and removed after ligature of the neck. The pillars were brought together by a double catgut ligature, a counter opening made for drainage in the fundus of the scrotum, and the wound carefully stitched. The wound remained aseptic and healed completely within 22 days. Two abscesses formed in the scrotum and one in the groin, which were opened and healed rapidly. The bowels acted soon after the operation, and

the constitutional symptoms underwent rapid improvement. He was discharged 88 days after the operation in good health, and with his rupture radically cured.

ii. Mahomedan male, *æ*t. 60, has suffered from right oblique inguinal hernia for 2 years. It descended into the scrotum three days ago, and he has been unable to reduce it. Bowels obstructed; frequent vomiting; tongue dry; pulse weak and rapid; tumour dull, painful, and tense; no impulse. Six ounces of sanguineous serum were removed by a small trocar. The sac was laid open. It contained a mass of ecchy-mosed omentum and a loop of highly congested intestine. The omentum was ligatured in sections, and the diseased portion cut off. The bowel was returned, and the operation completed as in the preceding case. The wound remained aseptic, and healed completely in 19 days. He made a good recovery, and left hospital in 20 days, having been provided with a truss, which he was advised to wear for some time.

iii. Hindu male, *æ*t. 70. Had suffered from right oblique inguinal hernia for about a year. It descended into the scrotum 38 hours before admission, and he has not been able to return it. The tumour is dull and tender, and has no impulse on coughing. Bowels obstructed; vomited once; tongue moist; pulse regular, 92. Sixteen ounces of sanguineous fluid were removed from the sac, the taxis tried, and then elastic pressure for half an hour under chloroform without effect. The sac was then laid open. It contained highly congested intestine and mesentery which were glued to the interior of the sac by

recent effusion. The contents were returned and the operation completed as in the previous cases. On the 3rd day, tympanites set in, and on the 6th, the discharge was found to be offensive. Tetanus appeared on the 7th day and proved fatal in a few hours.

iv. Hindu male, *æt.* 24; congenital hernia on right side. Descended about an hour before admission, and could not be reduced. Scrotum swollen, tender, tense, and tympanitic. Vomited several times; pulse weak. Taxis tried without avail. The scrotum was tapped with a small trochar, and some 16 ounces of sanguineous serum (almost pure blood) removed. Taxis again tried, but without effect. The sac was now laid open ($8\frac{1}{2}$ hours after the descent). It was found to contain cœcum which was filled with blood clot. It was punctured in two places, and some sanguineous fluid removed. These punctures continuing to bleed, they were ligatured with fine catgut. The cœcum was then returned, the neck of the sac isolated and tied, the rest of the sac (tunica) dissected off the cord down to the testicle and removed, the pillars brought together with catgut, a counter opening made in the fundus of the scrotum, a drainage tube inserted, and antiseptic dressing applied. The case did well. Some suppuration took place in the wound, but it healed in 24 days. On the second and third days loose motions containing blood were passed. He remained in hospital 23 days, and was provided with a truss, which he was instructed to use for some time, although no impulse at the external ring or sign of descent existed.

v. Hindu male, *æ*t. 29. Has had right oblique inguinal hernia for 10 years. Seven days ago a descent took place while he strained at stool, and since then he has not been able to return it. Taxis has been tried repeatedly without avail. Has not passed stool for seven days, nor flatus for three days. Tumour hard, tense, and very tender; no impulse; abdomen tympanitic; pulse feeble; has vomited frequently; is very restless. The sac was opened, and found to be intensely congested and to contain a mass of matted omentum and a loop of very congested small intestine. The omentum was removed after ligature in sections. It weighed 1 lb. 5oz. The intestine was removed, and the operation completed as in the previous cases. He soon obtained relief by passing flatus and fæces. The wound remained aseptic, and he was doing well until five days after the operation, when tetanus set in. This disease pursued a very acute course, and caused death next day.

* * In all these cases measures were taken to procure a radical cure in addition to those which were necessary for the relief of strangulation. In the three cases which recovered, the result was, as far as could be judged, satisfactory. A truss was given as a precaution. In one of the fatal cases there were symptoms of peritonitis; probably caused by gangrene of the bowel, but *no post-mortem* examination could be obtained. The onset of tetanus was in this case coincident with a putrid state of the discharge from the wound. In the second fatal case it was not so: no symptom of abdominal

trouble existed, and the wound was aseptic. Several of the cases illustrate the importance of tapping the sac with a fine trochar, in order to ascertain the fact and degree of strangulation. The evacuation of fluid in this manner is also in some cases an aid to the taxis, when that procedure is deemed justifiable.

4. *Operations for the radical cure of hernia.*

i. Mahomedan male, *æ*t. 48. Right reducible inguinal hernia of one year's duration. General health good. Sac dissected out, transfixed, and tied at the neck with catgut. Rest of sac removed. Stump reduced into canal. Pillars brought together with double catgut thread. Counter-opening made in scrotum; tube inserted; and antiseptic dressing applied. Wound pursued an aseptic course, and healed in 15 days. He remained in hospital 40 days. The canal was firmly closed; and there was no hernial impulse. He was provided with a spring truss, and advised to wear it for some time.

ii. Mahomedan male, *æ*t. 30. Right oblique inguinal hernia of 20 years' duration. Had been repeatedly strangulated; but was always returned by taxis. This happened on the day of admission. Suffering from fever of remittent type. He was detained in hospital for 40 days—until the fever subsided—and then operated on in the same manner as the last case. Suppuration took place in the track of the wound and repair was somewhat slow. He absconded 32 days after operation, when the wound was almost healed.

iii. Mahomedan male, *æ*t. 30. Double oblique inguinal hernia; right of nine years', and left of

two years' duration. Both operated on simultaneously. Right sac removed after ligature; left, which was smaller, ligatured at neck, and replaced in the canal. Wounds remained aseptic; left healed in 16 days, and right in 21. Was detained in hospital for 25 days, and provided with a double truss. Not heard of since his discharge.

iv. Hindu male, *æ*t. 5. Suffering from inguinal hernia of the left side from the age of three months. The neck of the sac was exposed, isolated and ligatured in two places—the intervening part being removed. The pillars were brought together, and the wound stitched and dressed antiseptically. Some swelling of the scrotum took place, and the wound suppurated. The patient had high fever for a few days. On puncturing the scrotum, some pus escaped from what remained of the cavity of the sac. The swelling and fever then subsided, and the wound healed. The result, eventually, was satisfactory. Left hospital 23 days after the operation.

v. Mahomedan male, *æ*t. 50. Right reducible inguinal hernia of 15 months' duration. Operated on as in case i. Wound healed kindly. A small collection of pus formed in the scrotum, which had to be emptied. Discharged 47 days after operation with wound soundly healed, and no sign of recurrence.

vi. Hindu male, *æ*t. 44. Reducible right oblique inguinal hernia of two months' duration with double hydrocele; latter tapped and injected. Hernia then operated on in the usual way. Wound pursued an aseptic course, and healed by first intention. Discharged 42 days after

operation with a truss, which he was advised to wear for sometime, as a precaution.

vii. Mahomedan male, *æ*t. 30. Admitted with double oblique inguinal hernia of three years' duration. The right hernia was irreducible, but was returned after application of ice. Four days after admission, both herniæ were operated on simultaneously in the usual manner. He did well until the fifth day, when the temperature rose, and diffuse cellulitis of the left abdominal wall was discovered. The discharge from the side became putrid. A free incision was made to relieve tension, and evacuate pus. Symptoms of septicæmia increased, the left pleura filled, and he died of exhaustion, from blood-poisoning, eight days after operation. The left pleural cavity was found to be distended with pus; and the lungs were studded with pyæmic abscesses.

viii. Hindu male, *æ*t. 9. Congenital inguinal hernia of left side. Sac exposed and tied at neck; remainder separated from the cord as far as the testicle, and removed; a counter-opening made in the scrotum, and drainage tube inserted. Some suppuration took place, and the wound healed by granulation. Discharged 25 days after operation, apparently quite cured.

ix. Mahomedan male, *æ*t. 45. Reducible left oblique inguinal hernia of three years' duration. Had hydrocele on the same side. Scrotum somewhat thickened. Usual operation performed. Some suppuration occurred in the wound, and the scrotum swelled—with fever (elephantiasis). This subsided, and he was discharged

47 days after operation, with the wound soundly healed, and the hernia radically cured.

x. Native Christian male, *æ*t. 25. Congenital hernia, right side. Sac exposed; neck tied, and reduced into canal. Remainder of sac dissected off and removed. Opening made in fundus of scrotum, and drainage tube inserted. Wound remained aseptic, and healed, without suppuration, in 13 days. Discharged 25 days after operation.

xi. Hindu male, *æ*t. 40. Reducible oblique right inguinal hernia of three years' duration. Usual operation. Some bleeding took place after operation; and a thrombus formed in the wound cavity, which suppurated freely. Repair took place by granulation. He was discharged 51 days after the operation with the canal well closed, and no sign of recurrence.

* * The operation performed in these cases has been fully described in a clinical lecture which I published in this Journal (September 1882), and reproduced in my work on "Operative Surgery" (page 202). The points which the additional experience of these cases has impressed on me are: 1st. To transfix the neck of the sac twice, at right angles, in tying it. This gives greater security to the ligature and renders it unnecessary to tighten it so much; 2nd. The great advantage of making an opening in the fundus of the scrotum and inserting a drainage tube; 3rd. In congenital cases, the advisability of cutting off the tunica close to the testis rather than tying it; and 4th. The danger of performing an operation on both sides at the same time in double cases. The only fatal case

in this series (vii) was a double one, and though septic infection, resulting in pyæmia, may occur in single operations, the chances of its occurrence are greater in double operations, while the vital resistance is lowered by the shock of a more severe and prolonged procedure.

In addition to these cases a radical operation was successfully performed for the cure of reducible right inguinal hernia which was complicated by scrotal elephantiasis (see vi B. 1. xiii). Unfortunately we have been unable to trace the subsequent history of any of these 12 persons; but when they left hospital, the result seemed to be quite satisfactory, and none of them has since returned. They were each provided with a truss, and advised to wear it for at least a year.

5. *Operation for the radical cure of umbilical hernia.*

Mrs. M., 'European, æt. 43. Five years ago when stooping down to lift a child, she felt something give way at the navel, and a lump formed, which has gradually increased in size. In August 1885, the swelling became tense and painful, and its contents could not be reduced. They were returned after the employment of fomentations and purgatives. The tumour is very large, and fills whenever she stands up. The ring is very wide, admits three fingers, and is situated just above the umbilicus. The contents return into the abdominal cavity when she lies down, or with the aid of manipulation. On the 13th of February an operation was performed for the cure of the hernia. An incision was made in the middle line down to the sac which was carefully isolated and stitched at the neck by 4 or 5 catgut sutures.

Two adherent omental processes had to be tied and returned. Five strong double catgut sutures were placed in the edges of the tendinous ring, and tied firmly. The wound was then stitched with iron wire and horse-hair, two drainage tubes were inserted, and an antiseptic dressing applied. There was slight fever for a few days; and free suppuration took place in the wound cavity. The lower third of the wound healed by first intention, and the rest by granulation. On the 13th of March, while the wound was undergoing satisfactory repair, she began to have fever, which gradually increased in severity. On the 26th of March, an abscess on the right broad ligament was detected; and on the 30th this was aspirated, and 4 oz. of foetid pus removed. Re-accumulation took place; and, on the 1st of April, the abscess was opened above the pubes, and a drainage tube inserted. It gradually closed. The fever subsided after the opening of the abscess. Her health improved rapidly; and she left hospital on the 24th of April, quite cured of both hernia and abscess. A letter received from her about a year after her discharge reported that no return of the rupture had then taken place.

* * * The patient was a stout, unwieldy woman, with a very flabby abdomen; and the suppuration of the wound was caused by putrefaction which was probably due to slipping of the dressings;—these were not at first secured by elastic bandages or strapping; the latter was subsequently employed to retain them, with benefit. Whether the pelvic cellulitis was of septic origin, it is difficult to say. No other suppuration took place; and when the abscess-cavity was emptied and

drained, it healed up kindly. No symptom of peritonitis was observed throughout, and the final result of the operation was satisfactory though considerable suffering and prolongation of convalescence were caused by the putrefaction and suppuration of the wound.

6. *Incisions for hæmatocele.*

i.—Mahomedan, *æt.* 60. Hæmatocele of right side of three months' duration; began with fever. Tunica laid open; wound dressed for granulation. Healed in 35 days.

ii.—Mahomedan, *æt.* 50, Scrotum enlarged by elephantiasis. Had a fall a fortnight ago, followed by increased swelling and pain. Right tunica found distended with grumous blood. It was laid freely open. The cavity suppurated and granulated; and the wound healed in 40 days.

iii.—Mahomedan, *æt.* 60. Has suffered from swollen scrotum for eight years. The swelling increased periodically with attacks of fever. Both tunicae immensely, distended with coffee-coloured fluid; skin of scrotum much thickened. The scrotal skin was removed by an oval incision. The tunicae laid open, and emptied. They were both, much thickened and degenerated. The right contained 48 oz. and the left 32 oz. of hæmatocele fluid; 146 oz. of similar material had been removed, by tapping, on the previous day. The tunicae were dissected off the cord, and removed; the testes trimmed and stitched in the perinæum, as in an operation for scrotal tumour, and the remains of the scrotal skin drawn over them by continuous catgut suture. On the 4th day the wound was found to be putrid and sloughy. Dysentery set in on the third day, and

broncho-pneumonia on the 7th. Patient died of exhaustion 10 days after the operation.

iv. Mahomedan, *æt.* 40. Has suffered from hydrocele of right tunica for 24 years. Had a strong attack of fever five months ago, followed by increase of swelling and great pain, which have continued up to the present. The tunica was laid open, and about a pint of coffee-coloured fluid removed. The cavity was washed out, and dressed for granulation. He was discharged, well, 61 days after the operation.

* * Hæmatocele in old subjects is generally a sequel of hydrocele. The tunica undergoes great thickening and degeneration. A slight injury is then sufficient to cause bleeding into its cavity. This may also occur spontaneously from degenerative erosion. Patches of abrasion are seen in these cases on the interior of the tunica, and it is from these, apparently, that the bleeding takes place.

The treatment by free incision is the most effective and speedy. I have tried a small opening and drainage. If putrefaction takes place in the cavity—and this is a probable contingency—the result may be dangerous or fatal. Even if the cavity remains aseptic, the process of repair is very slow. With free incision and complete evacuation, it is easier to avoid putrefaction, and repair is much more rapid.

7. *Incision for bubo with removal of inguinal glands.*

i. East Indian, male, *æt.* 18. Acute bubo of 10 days' duration following chancroid. A free incision was made, and some enlarged, softened, and partially isolated glands were removed by

enucleation by finger. The wound was dressed antiseptically, and healed soundly in 37 days.

ii. Hindoo male, *æ*t. 29. Double bubo of 20 days' duration following chancroid. Right laid open 20 days ago, and still discharging; glands much enlarged. A free incision was made; the glands of left side removed by finger; and the remains of those of right scraped out by Volkmann's spoon. Eighty-one days after operation: sinuses still remaining, these were enlarged, and three diseased glands removed from right, and one from left side. The wound now granulated and healed in 54 days.

iii. East Indian male, *æ*t. 24. Had undergone operation for right bubo with extirpation of glands five months ago. Suppuration took place subsequently on left side, which was incised without removal of glands. Sinuses have recently formed in both cicatrices; and they are found to lead down to indurated and enlarged glands. The sinuses were laid open, and the glands removed. The resulting wounds healed by granulation in 50 days.

iv. East Indian male, *æ*t. 40. Enlarged inguinal glands of both sides following chancroid. Limited fluctuation on the surface. Incisions were made, and the enlarged glands removed. They were found to be undergoing caseation. Left hospital, quite recovered, in 53 days.

* * The removal of partially disorganised glands in acute bubo greatly accelerates recovery. In chronic bubo the glands are apt either to undergo caseation of centre or fibroid thickening of capsule or both; and, in either case, incision alone is sure to result in obstinate sinus. I

very virulent bubos complete destruction by suppuration saves the trouble of enucleation. In the milder forms of perilymphadenitis, when the gland is simply hyperplastic, incision is sufficient; but, between these two extremes, a more satisfactory result is obtained by extirpating the diseased gland or glands, than by incising only.

8. *Perineal section.*

i. Mahomedan, *æt.* 40. Admitted with retention of urine. Penis and scrotum œdematous. Urine dribbling. History of gonorrhœa and stricture. Some offensive urine was removed by a No. 8 catheter. The perinæum was opened; and the urethra divided up to the prostate. The bladder was then emptied by a No. 12 catheter. A free incision was made into the scrotum, in the middle line. A large cavity was found containing foetid urine and pus. This was also entered from the perinæum and a drainage tube passed from one opening to the other. Syme's S-shaped catheter was tied in. Some bleeding took place after the operation requiring the use of a petticoat. The scrotal swelling subsided, and cavity gradually healed. Urine began to flow *per urethram* after 15 days. A full-sized bougie (Lister's) was passed into the bladder at intervals of three days. He was improving rapidly, when he absconded, 43 days after the operation.

ii. Hindu, *æt.* 28. Admitted with retention of urine; bladder distended. Perinæum, scrotum, and lower part of abdomen swollen and œdematous. History of stricture for six or seven years. Some urine had been removed by a No. 6 catheter, and some small punctures made in the

scrotum. The perinæum was freely laid open and the membranous urethra fully divided; large quantity of ammoniacal urine was thus removed. A free incision was made into the swollen penis. Urine continued to pass through the perinæal wound, and extensive sloughing of the penis and scrotum took place;—the former was almost amputated by the gangrene. An attempt was made to suture the corpora cavernosa, but failed; and it was, finally, thought best to remove the organ. The ulcers left by the sloughing cicatrised. The perinæal orifice was kept open by occasional passage of a catheter, and micturition was performed through it. Patient had control over the sphincter vesicæ. He remained in hospital 52 days.

iii. Hindu, *æt.* 38. Admitted with retention of urine, and painful swelling of perinæum. Gonorrhœa 12 years ago; stricture for four years and retention for 12 days. The perinæal abscess was laid open; the membranous urethra divided, and a No. 12 catheter passed into the bladder *per urethram*. He began to make water through the penis 15 days after operation, and left hospital 57 days after the operation, with the perinæal wound closed and a fully dilated urethra. A No. 12 catheter was introduced into the bladder every third day during his stay in hospital.

iv. Hindu, *æt.* 30. Sustained rupture of urethra by a fall on the perinæum. Bladder distended; perinæum swollen. A No. 8 catheter passed. Perinæum divided, and urethra opened up to prostate. A No. 12 catheter passed. Wound closed in 35 days. A No. 12 catheter

passed into the bladder every fourth day. Able to pass water freely in full stream.

v. Hindu, *æt.* 40. Retention of 24 hours' duration. History of stricture. Perinæal section had been performed two years ago. Stream has gradually become narrowed. Bladder relieved by tapping before admission. A No. 2 catheter was passed with difficulty, and the perinæum and urethra were divided on it. The stricture was also divided, and a No. 12 catheter passed by the urethra. Left hospital 40 days after the operation, with the perinæal wound closed, and able to make water in full stream. A No. 12 catheter had been passed every fourth day.

vi. Eurasian, *æt.* 28. Perinæal abscess and fistula consequent on gonorrhœa and stricture. Perinæum laid open and stricture divided on a grooved staff. No. 12 catheter introduced. Both sinuses and perinæal wound closed within 68 days. A full-sized catheter was passed every fourth day.

vii. Mahomedan, *æt.* 35. Urinary fistula and stricture. Had gonorrhœa 20 years ago, and perinæal abscess 12 years ago. Perinæum incised, and stricture divided on a grooved staff. Absconded a month after operation, before the cure was completed. The urethra admitted a No. 10 catheter.

viii. Hindu, *æt.* 35. Six fistulæ in the perinæum and scrotum, also fistula *in ano*. History of gonorrhœa, abscesses, and fistula ranging over 22 years. A No. 2 catheter introduced, and external urethrotomy performed. No. 12 catheter passed *per urethram*; anal fistula divided. Remained in hospital 18 days. The anal fistula

was cured, and all the urinary fistulæ closed. The wound had not healed; and half of the urine passed through it. The urethra admitted a No. 12 easily, which was passed every fourth day.

ix. Hindu, *æt.* 40. Had an attack of gonorrhœa 20 days ago, followed by hæmaturia in five days. Urine began to issue *per anum* in three days; and on the day preceding admission a opening formed in the perinæum, also discharging urine. There is a large gluteal abscess on the right side. The perinæum was laid freely open; a stricture was divided, and a No. catheter passed into the bladder. The gluteal abscess was also opened. He was very low and continued so for three days. Temperature subnormal. Then, slight reaction took place; but it was followed by prostration, and he was removed in a moribund state, six days after the operations.

x. Hindu, *æt.* 70. Ten urinary fistulæ in perinæum and scrotum. Had gonorrhœa five years ago, followed by abscess. Urethra admitted a No. 12. Perinæal section performed on a guide. A full-sized catheter was passed every fourth day. Left hospital 70 days after operation passing water in full stream, and with the perinæal wound closed.

xi. East Indian, *æt.* 28. Admitted with recent fistula on left of perinæum, following gonorrhœa and stricture. Urethra admitted No. 12. An attempt was made to close the fistula by laying it open, and passing a full-sized instrument every third day. After persevering with this treatment for 45 days, the perinæum was freely laid open and the membranous urethra divided. The fistula healed.

but the perinæal wound remained slightly open after 65 days. His health being bad, also the fistula threatening to reopen, he was advised to take a change of air, which resulted in closure of the perinæal wound. He has a full-sized sound passed occasionally.

xii. Hindu, *æt.* 40. Suffered from gonorrhœa 24 years ago, followed by stricture. A second attack three years ago was succeeded by abscesses of scrotum and perinæum and fistulæ. There are now four of these, and the urethra is much narrowed by a succession of tight strictures.

The perinæum was laid open, and the strictures divided. A No. 12 was passed into the bladder. He was doing well until eight days after the operation, when fever and swelling of the scrotum occurred. This was followed by left pleurisy, and erysipelas of the groins and flanks. He was removed in a low condition 55 days after the operation.

Cock's operation.—i. Hindu. *æt.* 30. Admitted with large double hydroceles and general anasarca. The hydroceles were incised and drained, and, while in satisfactory process of cure, 26 days after the operation, symptoms of extravasation of urine presented themselves;—swollen, boggy perinæum, œdematous scrotum, and tender swelling above the pubes. There was a stricture near the meatus which was divided, and the perinæum was laid freely open, the floor of the urethra incised, the bladder emptied, and a No. 12 catheter passed. Urine escaped freely through the wound, and the patient seemed to do well for three days, when the supra pubic swelling became boggy. It was

freely incised in the middle line, and a drainage tube passed through the wound, beneath the pubic arch, to the perinæal wound. The symptoms of septicæmia became more severe; and this disease proved fatal five days after the operation.

ii. Hindu, *æt.* 33.—Has suffered from stricture for eight years, and from retention for three days. Instruments have been used forcibly and the urethra is badly lacerated; the bladder is greatly distended. A catheter can be passed; but nothing issues through it, except a small quantity of sanious fluid. The perinæum was divided and the urethra incised in front of the prostate. The bladder was found to be full of clots, which were removed by a lithotomy scoop and injection. A stricture of the penile urethra was divided, and a No. 12 passed from behind forwards. After a week a full-sized instrument was introduced into the bladder *per urethram* and this was repeated every fourth day. He left hospital 31 days after the operation with the perinæal wound closed, and able to make water in full stream.

iii. Hindu, *æt.* 30. Stricture and perinæal abscess. Gonorrhœa six months ago. Abscess opened, and stricture divided. A No. 12 passed *per urethram*. Secondary hæmorrhage took place on the 5th and 7th days, and was stopped by ligature and pressure. A full-sized catheter was introduced 25 days after the operation, and every fourth day thereafter.

He left hospital 87 days after operation, with the perinæal wound still unclosed, but passing about three-fourths of his urine through the penis in good stream.

iv. Mahomedan, *æt.* 55. Retention for 48 hours. History of gonorrhœa and stricture. The bladder had been tapped *per rectum*, and the canula retained. Perinæum and scrotum much swollen. Patient very low. Perinæum laid open, and urethra incised in front of the prostate by Cock's method. Syme's catheter tied in. Incisions were also made on the swollen penis and scrotum. Patient died of septicœmia four days after operation.

v. Hindu, *æt.* 50. Gonorrhœa ten years ago followed by a succession of fistulæ, which are situated on the perinæum, scrotum, and penis, and through which urine is passed with great difficulty. No instrument could be passed into the bladder. The perinæum was divided and the, strictured urethra laid open. A No. 12 catheter introduced. This was repeated every fourth day. Patient left hospital 57 days after operation before the cure was completed.

vi. Mahomedan, *æt.* 35. Fell on the perinæum six days ago. Has not been able to make water since then. Passed some blood after the accident. Perinæum swollen and boggy. Catheterism tried to no purpose. Bladder distended to umbilicus. Cock's operation performed; 6 pints and 2 oz. of bloody urine withdrawn. Considerable deep bleeding which was stopped by plugging. He got a violent attack of dysentery next day, which proved fatal in twelve days. Pyæmic abscesses were found in the liver.

* * * The causes for which these 18 operations of perinæal section were performed were various. Two were rendered necessary by rupture of the urethra—one recent, and one of six days' stand-

ing; the recent case did well; the other got pyæmia and died. Two were cases of external uthe-
thotomy for strictures with retention. In one
of these the urethra had been badly lacerated
by violent catheterism, and the bladder was
distended with clots. These cases are not un-
common; and it is often impossible to introduce
an instrument into the bladder. If the reten-
tion is urgent, Cock's operation is the best and
safest course in such cases; the stricture being
sought for and divided at the same time that
the bladder is opened by incising the prostatic
urethra. Both these cases did well. In three
cases perinæal abscess was associated with
stricture and retention; and by the same
operation the abscess was evacuated, the blad-
der emptied, and the stricture divided. Six
were cases of urinary fistula. Owing to neglect
these cases are often of a severe and intractable
nature. If perinæal section does not confer com-
plete cure in such cases, it gives great relief
by exchanging one direct and central opening
for several tortuous ones, and the swelling sur-
rounding the latter also disappears. By the
persevering use of instruments a perfect cure
can be obtained in such cases if the loss of
substance in the perinæum has not been great.
Five were cases of extravasation of urine. Two
of these did well, two died, and one was removed
moribund.

The importance of passing full-sized instru-
ments frequently in such cases need hardly
be pointed out. In all cases of stricture oc-
casional instrumentation is advisable; how-
much more so when the urethra is divided by

operation or damaged by injury or disease. Unfortunately in hospital practice it is very difficult to persuade patients to undergo this very necessary part of the treatment.

9. *Incision for anal ulcer.*

Eurasian female, *æt.* 22. A large ulcer of rectum of eight months' duration; constantly passing blood and mucus, with pain and straining. Sphincter and floor of ulcer divided, and wound dressed with iodoform and boracic ointment. The ulcer healed by granulation: and she left hospital in 56 days with the parts almost healed, and quite relieved of her former sufferings.

10. *Tenotomy for talipes varus.*

i. Mahomedan male, *æt.* 3. Talipes varus of right foot, and enlarged bursa over outer ankle. The tendo achillis and the tendons of the tibialis posticus and flexor longus digitorum divided and the bursa dissected out. Removed 17 days after operation with the foot greatly improved.

ii. European child, *æt.* 12 months. Right talipes equino-varus. Had been operated on shortly after birth, but the deformity persisted. The tendons of the tibiales and flexor longus digitorum and the tendo achillis were divided, and, under greater care in after-treatment, a better result was obtained.

iii. A precisely similar case.

iv. European child, 2 months old, with double talipes varus. The tendons were divided, and under careful after-treatment the deformity was thoroughly corrected.

* * * The three last cases were not detained in hospital; in two of them the tendons had been previously cut, but the necessary after-treatment

neglected. To ensure thorough section, the tendons were exposed by a small longitudinal incision, raised by a strabismus hook, and divided. Case iv was a complete success owing to the intelligent aid of the parents.

11. *Large abscesses.*

a. Axillary abscess.—Hindu, *æt.* 14. 15 days duration, opened and drained antiseptically healing delayed by an enlarged gland. Discharged quite recovered in 69 days.

b. Hepatic abscess.—Hindu male, *æt.* 42. Had fever one year ago, followed by enlargement of the liver. Fever subsided in three months, leaving the liver enlarged. A relapse of the fever occurred seven months ago, attended with a hard swelling in the right hypochondrium. Fever left after a month; but the swelling remained, and during the last four months has been increasing in size. It is situated over the epigastric and right hypochondriac regions, is dull on percussion and fluctuates. The right lobe of the liver is of normal dimensions. An incision was made on the 2nd of December 1886 under antiseptic precautions at the most prominent part of the tumour, and 3 oz. of reddish-brown pus removed, a sinus was found leading deeply into the left lobe of the liver. A drainage tube was inserted. The swelling subsided, no fever ensued, and the discharge continued to flow through the tube in considerable quantities. It remained sweet. The tube was removed on 18th December. On 17th January the sinus being contracted, but patent and still discharging, it was enlarged, and the tube reintroduced. On the 19th of February discharge continuing

chloroform was administered, and the sinus laid freely open. He remained in hospital till the 14th of May. The orifice had again undergone contraction, and a small amount of discharge continued to issue from it. He was free of all uneasiness, his general health was good, and, tiring of treatment, he insisted on leaving the hospital.

c. Iliac abscess.—i. A Hindu, *æt.* 16. Pyæmic abscess of left side in a case of resection of elbow joint for compound fracture (*vide* III. 3. *a.*) opened and drained. Patient died of pyæmia.

ii. Mahomedan male, *æt.* 30. Left iliac abscess of one month's duration, opened by Hilton's method below Poupart's ligament and drained. Healed in 28 days.

iii. Hindu, *æt.* 11. An iliac abscess had been opened ten days ago on right side above Poupart's ligament. This was being imperfectly drained. Another iliac abscess existed on left side. Getting high fever and suffering from dysentery. Both abscesses laid open below Poupart's ligament. Discharged well in 31 days.

iv. Eurasian child, *æt.* 4. Right iliac abscess opened beneath Poupart's ligament. Removed convalescent five days afterwards.

v. Hindu, *æt.* 5. Left iliac abscess of 5 days' duration, result of a fall, opened antiseptically below Poupart's ligament, healed in 16 days.

vi. Mahomedan male, *æt.* 16. Abscess of right iliac fossa and right thigh (periosteal) the result of fever. Both opened on the same day by Hilton's method under antiseptic pre-

cautions. The iliac abscess healed in 10, and the thigh abscess in 28 days.

* * * The advantages of opening these abscesses below Poupart's ligaments are: (1) that the abdominal wall is not weakened; and (2) that the drainage is more thorough, and repair more rapid. The spot at which the opening is made is half-way between the artery and the anterior superior spinous process of the ileum. The skin, superficial and deep fascia are divided by a short longitudinal (vertical) incision. A director finds its way very easily along the under surface of the iliac fascia. The opening is enlarged by a forceps and a good-sized drainage tube inserted. Repair takes place in 10 to 15 days.

c. Pelvic abscess.—This case has been already described under the head of radical cure of umbilical hernia (IX 5). The collection was situated in the right broad ligament of the uterus, and was evacuated by aspiration in the first instance, and then by incision above the pubes and drainage.

d. Gluteal abscess.—i. East Indian child *æt.* 4. Deep abscess of right gluteal region of 10 days' duration, opened antiseptically by Hilton's plan. Healed in 12 days.

ii. European male, *æt.* 30. Five weeks ago he jumped into water. This was followed by fever and pain over left buttock, which became prominent a few days ago. A large and deep abscess was opened, and a portion of the ileum was found to be bare. A sinus resulted opposite the bare bone which continued to discharge after the abscess cavity had filled up. He was ad-

vised to return to Scotland, and left hospital 63 days after the operation.

e. Thigh abscesses.—i. East Indian child, *æ*t. 9. Sustained a fall nine days ago, resulting in painful swelling of left thigh. An abscess was detected beneath the quadriceps muscle, and was opened antiseptically by Hilton's plan. It healed completely in 19 days.

ii. Hindu male, *æ*t. 20. Admitted for acute synovitis of right knee-joint. A large collection of pus was detected in the lower part of the thigh 13 days after admission. It was opened antiseptically, and healed in two months. The joint underwent simultaneous recovery.

iii, iv. There were two cases of children admitted with sinus of the leg leading to bare-bone, abscess of the thigh and diseased knee-joint; the abscess was opened and sinus drained. One child was removed before recovery was complete, the other got fever of a hectic type, and died of convulsions.

v. Hindu, *æ*t. 25. Large and deep abscess of thigh of 15 days' duration, resulting from fever, opened antiseptically; healed in 19 days.

* * * These abscesses were opened and subsequently dressed, under irrigation, by bichloride lotion. In no case did putrefaction occur. Several of the cases illustrate the advantage of opening periosteal abscesses early; and a few of them indicate the trouble which is apt to arise if this is not done;—the periosteum is destroyed, osteitis ensues, and necrosis varying in depth according to the severity and extent of the osteitis is the consequence. This is often associated with sclerosis or the latter occurs alone.

In either case a very protracted and intractable sinus results.

X. REPARATIVE OPERATIONS.

1. *Operation for harelip.*—Eurasian child aged 4 months. A very feeble, thin child, with cleft palate, and single complete harelip. The edges were pared, adhesions separated, the wound carefully stitched with horse-hair, and a button stitch of relaxation applied at some distance from the edges. The wound suppurated freely, the stitches cut and dragged, and union did not take place. A second operation was postponed until the child was older and in better health.

2. *Operation for cleft palate.*—A European child, *æt.* $2\frac{1}{4}$ years. Fissure of the soft palate. The edges were pared, the palatine muscles divided, and the wound united by silver wire. A small part of the wound gaped, and a second operation was required to close the aperture.

3. *Operation for vesico-vaginal fistula.*
i. Hindu female, *æt.* 35. A large fistula caused by sloughing of anterior wall of vagina due to tedious labour. Urethral orifice contracted; bladder prolapsed through the fistula. The urethra was dilated sufficiently to admit the forefinger. The os uteri was drawn down by vulsellum. A flap was dissected off the anterior lip of the os and stitched to the lower edge of the gap; a drainage tube was inserted *per urethram* and secured *in situ* by horsehair stitches. The aperture was partially closed by these means. A second operation reduced its size still further. Patient became impatient of treatment, and

left hospital in two months, before the cure was complete. The central portion of the gap had been bridged, but two holes remained—one on each side. The prolapsus of the bladder was remedied.

ii. Mahomedan female, *æt.* 35. A very aggravated case caused by tedious labour about a year ago. It was operated on in the same way. Partial closure was obtained; but the patient would not submit to a second operation. She was transferred to the Eden Hospital thirty-four days after operation.

4. *Operation for penile fistula.*—Mahomedan, *æt.* 45. The fistula resulted from the discharge through an ulcerated aperture on the dorsum of the penis of a urethral calculus two months ago. The urethral orifice underwent contraction at the same time, and the fistula has recently been contracting, giving rise to difficulty and distress in urinating; the glans penis had been destroyed by the ulceration. The corpus spongiosum was laid open above the indurated tissues and its edges pared and stitched to the skin. The orifice was kept patent during the process of healing by passing a No. 12 catheter occasionally. He left hospital with a good meatus 14 days after the operation.

5. *Operations for cicatrix after burn.*—i. Hindu male, *æt.* 23, admitted 3rd December 1885. Had sustained a severe burn of left arm 6 months previously, causing the formation of cicatricial webs in front of the wrist, elbow and shoulder-joints. The webs in front of the wrist and elbow were divided on the 5th of December, and flaps of skin transplanted from the back of

the hand and forearm to fill the gaps. The result was good. He underwent a second operation on the 11th of January for the web stretching between the arm and chest wall. This was divided freely, and a flap was taken from behind the axilla, pulled forward and stitched in front. This prevented re-formation of the web, and he left hospital in twenty-one days with good use of his left arm.

ii. Hindu boy, *æt.* 10. Got his right arm and chest severely burnt $1\frac{1}{2}$ years ago, and there is cicatricial adhesion between the arm and the forearm down to its lower third to the side of the chest. The right half of the chest anteriorly is covered with a thick cicatricial breastplate. An operation was performed for liberating the arm and forearm in June 1885; but during the process of repair, the parts were pulled together again, and the deformity and disability reproduced. The present operation was very thorough—including complete division of the cicatrix and dissecting off of its harder and thicker parts. Flaps were moved forward from the extensor aspect of the arm and forearm, and from the posterior aspect of the chest wall to provide a cutaneous covering for the flexor aspect of the joints. Repair took place kindly. The forearm was liberated and the use of the elbow largely restored; but the arm still remained bound to the side of the chest. He was detained in hospital 110 days. He has been re-admitted this year, and has undergone two further operations.

iii. Hindu male, *æt.* 21. Sustained a severe burn of right arm 17 years ago. There are two

cicatricial webs—one stretching between the arm and chest, and the other between the arm and forearm; the webs were divided and flaps transplanted from the extensor to cover the flexor aspects of the joint. The case did well, and patient left hospital 93 days after operation with a useful limb.

* * Cases of cicatricial contraction after burn are very common in Calcutta. They usually present a tight web stretching across the flexor aspect of one or more joints and holding these in a position of acute flexion, thus seriously impairing the use of the extremity. The principles of treatment employed in these cases are:

1st. To divide the cicatricial tissue thoroughly and transversely; avoiding, of course, by careful dissection, division of important structures.

2nd. To dissect off any hard keloid cicatrix, which is likely to impede repair.

3rd. To convert the transverse wound into a longitudinal wound.

4th. To dissect off flaps from the sides and back of the limb to enable the edges of the longitudinal wound to come together and provide a covering of skin on the flexor aspect of the joint.

5th. During the process of repair, to complete extension and maintain the movement of the joint.

6. *Operation for cicatrix after abscess.*—Hindu male, *æt.* 20. Had a popliteal abscess 9 months ago, followed by a sinuous ulcer, which resulted in a hard thick cicatricial mass holding the knee-joint flexed at an angle of about 60° . The cicatrix was dissected off, the hamstring

tendons divided, and flaps brought from the side of the knee to meet behind the joint, which was stretched to an angle of about 120° . The limb was placed on a McIntyre splint.

The wound remained aseptic, and healed kindly. The leg was straightened by means of the splint, and he left hospital in 65 days with a straight useful limb which he could flex to an angle of 90° .

7. *Operation for hernia testes.*—Hindu, *æ.* 25. The extrusion of the testicle was due to spontaneous rupture of a hæmatocele with sloughing of the scrotal integument. Syme's operation was performed, the testicle being dissected from its cicatricial adhesions, and the skin drawn over it and stitched. A good result was obtained in 32 days.

XI. OPERATIONS NOT CLASSED.

1. *Operation for imperforate anus.*—A male child three days' old. Abdomen greatly distended. An incision had been made in the skin of the anus without success. A small trochar was passed in the direction of the rectum, and meconium issued through the canula. A free incision was made backwards on this as a guide; the orifice was dilated with the finger. Meconium passed freely. Finally, the edges of the bowel were drawn down and stitched to the skin. The patient was taken home and not heard of afterwards.

2. *Nerve splitting.*—A Hindu, *æ.* 25. Suffered from syphilis 12 years ago. Got a severe injury of the dorsum of the right hand two years ago, followed by inflammatory swelling.

ing and gradual loss of sensation over the inner side of the hand.

The ulnar nerve is indurated and thickened above the elbow. The musculo spiral nerve is also felt to be thickened as it winds round the humerus. There is loss of sensation over the little and ring fingers as well as over the palm and dorsum of the ulnar side of the hand. Complains of tingling over the inner side of the forearm. There is no eruption or ulcer. There is considerable atrophy of the muscles of the forearm, also of those of the little finger. The little finger is rigidly flexed, and the ring finger partially so.

The ulnar nerve was exposed to the extent of four inches above the elbow. The coat of it was found to be congested and sclerosed. It was carefully split in the direction of its long axis to the full extent of the wound. The edges of the split gaped. It was also stretched.

The wound was stitched with horse-hair, and dressed antiseptically. It healed by first intention. Patient remained in hospital 17 days. The tingling disappeared, sensation was restored in some measure, and the ring and little fingers became more flexible. Anæsthesia of these fingers still remained.

GENERAL REMARKS.

1. *Mortality*.—The causes of death in cases which ended fatally have already been explained. It will be interesting and useful to consider here the death causes generally. The mortality-rate (26 in 183) amounts to 14·2 per cent. of cases treated to the end. This figure

corresponds very closely to the rate (14·7) which prevailed among the operations included in my work on "Operative Surgery."

The rate would be somewhat raised if I included four cases which were removed in a hopeless state. So much depends upon the class of cases included in such a series as the present that a general mortality - rate is a very uncertain index of surgical success. As, however, scrupulous care was taken to include in this series the same kind of operations as published in the work referred to, the rates are fairly comparable, and their close correspondence is remarkable. I would impose upon the figures no heavier burden than to indicate that the success obtained in 1886 was not worse than in 1879-83. The enhancement of the rate by including moribunds would be balanced by counting separately two or more operations on the same subject which has not been done.

2. *Death causes.*

These may be shown as follows :—

Shock ...	...	...	3
Exhaustion	...	...	9
Septicæmia	...	...	4
Pyæmia ...	...	...	2
Tetanus ...	...	...	3
Convulsions	...	...	1
Diphtheria	...	...	2
Pneumonia	...	...	1
Dysentery	...	...	1

26

Shock.—Previous ill health, loss of blood, and a severe operation combined in these cases to cause death in a short time.

Exhaustion.—This term included a great variety of fatal conditions, tending or combining to cause death. In four cases it indicates the sapping of life caused by recurrence of malignant disease; in one the termination of hectic; in one the effect of sloughing sorethroat, relieved, but not cured, by tracheotomy; in one asthenia from traumatic delirium in a subject debilitated by debauchery, drugs and fever; in one poisoning by cholæmia; and in one sinking from a serious operation for severe cancer.

Septicæmia.—Two of the deaths caused by septic poisoning were cases of extravasation of urine, in which the condition was fully established before operation was resorted to.

In another case a deep and extensive wound for removal of cancer underwent putrefaction; and in another of bad smash of the leg septicæmia existed before admission, and before amputation was resorted to.

Pyæmia.—In one case the disease existed on admission; in another (double operation for radical cure of hernia) sloughing cellulitis undoubtedly originated in the hospital.

Thus, of the total number of six deaths due to septic poisoning *per se*, only two can be attributed to causes developed during residence in the hospital.

Tetanus.—Two of the cases of tetanus were consequent on operation for strangulated hernia, and the third on amputation of the leg for gangrene. The remaining causes do not suggest general remarks.

3. *Antiseptics* have been sedulously used in all cases. The spray has been entirely discarded,

and irrigation with bichloride of mercury lotion (1 in 2,000) used instead. Bichloride gauze has also been employed in place of carbolic gauze with satisfactory result. The plan of dressing followed was that which I described last year in a paper on " Cheap Antiseptics " read before the Calcutta Medical Society. I have every reason to be satisfied with it. A few failures occurred but these must be looked for in the circumstances under any system of antiseptic management.

PRÉCIS OF OPERATIONS

PERFORMED IN THE

WARDS OF THE FIRST SURGEON, MEDICAL COLLEGE
HOSPITAL,

During the year 1887.

BY SURGEON-MAJOR K. MCLEOD, A.M., M.D., F.R.C.S.E.,
Professor of Surgery, Calcutta Medical College.

THE following table and notes are framed on the same principles and plan as similar statements for previous years which have appeared in this journal. I shall, therefore, place the data on record without preface. I have much pleasure in acknowledging the willing and intelligent assistance I have obtained from Assistant-Surgeon KHAGENDRA NATH SEN, M. B., in writing up the bedhead-tickets and preparing these abstracts. This is the seventh article of the present series:—

Table of Operations performed during 1887.

DESCRIPTION OF OPERATION.	No.	Died.
I.—OPERATIONS ON THE EYE AND ITS APPENDAGES.		
1. Excision of an eye-ball for rupture...	1	0
II.—OPERATIONS ON VEINS.		
1. Ligature of the axillary vein for secondary hæmorrhage ...	1	0
2. For Varicocele	1	0
Total ...	2	0

DESCRIPTION OF OPERATION.	No.	Died
III.—OPERATIONS ON JOINTS.		
1. Reduction of dislocation of shoulder-joint	1	(
2. Extension of stiff joints—		
„ <i>a</i> Elbow	1	(
„ <i>b</i> Knee	1	(
3. Excision of joints—		
„ <i>a</i> Elbow	2	(
„ <i>b</i> Knee	1	(
„ <i>c</i> Calcaneo-cuboid	1	(
4. Erasion of tarsus	2	(
Total ...		9
IV.—OPERATIONS ON BONES.		
1. Partial excision for necrosis (sequestrotomy)	17	(
2. Refracture of femur	1	(
Total ...		18
V.—AMPUTATIONS.— <i>A.</i> — <i>For injury.</i>		
1. Primary of the arm	2	
2. „ of the thigh	1	X
3. „ of the metacarpals	1	
4. Secondary of the arm for spreading traumatic gangrene	1	
5. Secondary of the leg for gangrene...	1	
Total ...		6
<i>B.</i> — <i>For disease.</i>		
6. Of the thigh for sarcoma	1	X
7. Of the leg for epithelioma	2	
8. „ for diseased ankle	2	
9. Above the ankle (Syme's) for diseased ankle-joint	3	
10. Of the metatarsals for necrosis	1	
Total ...		9
Grand total of amputations ...		15

DESCRIPTION OF OPERATION.	No.	Died.
VI.—REMOVAL OF TUMOURS (BY EXCISION). A.— <i>Malignant</i> .		
1. Removal of Cancerous glands (recurrent)	1	0
2. Epithelioma <i>a</i> of cheek	2	0
" <i>b</i> of tongue	1	0
" <i>c</i> of lower jaw	1	0
" <i>d</i> of chestwall	1	0
" <i>e</i> of scrotum	2	0
" <i>f</i> of penis and scro- tum	3	1
" <i>g</i> of rectum	1	0
3. Sarcoma of axilla	1	0
Total	13	1
B.— <i>Non-Malignant</i>		
1. Elephantiasis <i>a</i> of scrotum	16	1
" <i>b</i> of labia	1	0
2. Ostreo-cystoma of lower jaw	1	1
3. Diseased Cervical glands	1	0
4. Diseased inguinal glands	2	0
5. Papilloma of leg and foot	3	0
6. Keloid of chestwall	1	0
7. Condyloma of rectum	1	0
8. Hæmorrhoids	6	0
Total	32	2
Grand total of tumours	45	3
VII.—REMOVAL OF CALCULI.		
1. Prostatic by incision	1	0
2. Vesical by suprapubic lithotomy	2	0
3. " by litholapaxy	5	0
4. " by lateral lithotomy	1	0
Total	9	0

granulation in 37 days. Sight of right eye unimpaired.

II. 1. *Ligature of right axillary vein for secondary hæmorrhage.*—Hinda male, æt. 35. An abscess of the right axilla was opened 20 days prior to admission. The cavity putrefied and walls sloughed. Admitted with septic fever and secondary hæmorrhage. The orifice was enlarged and cavity plugged, but bleeding recurred on the 4th and 5th days. The cavity was now thoroughly laid open, and venous bleeding was found to proceed from the axillary vein, which was ligatured above and below the bleeding point, a small artery was tied, and a diseased gland removed. No further bleeding occurred. The cavity became clean and healed up by granulation. The fever subsided and he left hospital in 54 days, quite recovered.

2. *Operation for varicocele.*—East Indian male, æt. 27. A delicate young man subject to constipation, and obliged to stand at his work all day. Has a large double varicocele, which has grown bigger and more painful during the last 3 months. He cannot stand or walk without discomfort. The left side is worse than the right. Chloroform was administered, and an incision about 3 inches long was made over the left cord. The coverings of the cord were divided, and the varicose mass separated from the vas deferens and spermatic artery. It was ligatured with catgut at the external ring and just above the testicle, and the intervening portion removed; wound dressed antiseptically. It remained aseptic and healed in 28 days. The result appeared to be satisfactory.

III. OPERATIONS ON JOINTS.

1. *Reduction of dislocation of shoulder.*—Hindu female, *æt.* 40. Right joint dislocated by a fall. Reduced by the heel in the axilla.

2a. *Flexion of stiff elbow-joint.*—Hind female, *æt.* 20. Had an abscess of the joint three months ago. Stiffened in a straight position. Partial dislocation backwards. Joint forcibly flexed under chloroform and placed on an angular splint. Left hospital after a month with a more useful limb.

6. *Extension of stiff knee-joint.*—Hind male, *æt.* 45. Had gonorrhœal arthritis of both knee-joints two years ago. They have become fixed at an angle of 45° . Slight movement in right; left fixed. The right joint was forcibly straightened under chloroform on three occasions. Left hospital after 118 days; able to walk with crutches; would not have the left joint resected.

3a. *Excision of the elbow-joint.*—i. Hind male, *æt.* 18. Sustained an injury of the right elbow-joint six months ago by a fall which resulted in ankylosis and fixture at an angle of 120° ; the joint was resected through a straight posterior incision. The wound remained aseptic and healed in 20 days. Left hospital in 52 days with a moveable and serviceable joint.

ii. Mahomedan male, *æt.* 35; fell off a tree one year ago and sustained compound fracture of lower end of right humerus extending into the joint. The part suppurated, and two sinuses remained leading to bare bone. The joint was fixed at an angle of 90° . Resection was performed through a straight posterior incision, the

articular extremities of the humerus, radius and ulna being freely removed. The wound healed in 23 days, and patient left hospital with a moveable and useful joint in 52 days.

b. Excision of the knee-joint.—Hindu male, *æt* 25. Left knee-joint wounded 7 months ago by a *dhao*. It suppurated, and became ankylosed at an angle of 120° , and partially dislocated; patella fixed; joint opened by a semilunar incision below the patella which was separated by a chisel and removed. An angle was cut between the condyles of the femur and a wedge shaped on the head of the tibia, which was fitted into it; the wound closed by metallic and horse-hair stitches and dressed antiseptically. It healed kindly, and patient left hospital in 122 days with a straight limb, on which he could walk with ease.

* * The details of this case have been published at page 209 of vol. XXII. An operation performed on a similar plan was published in last year's "précis." The result in the present case was very satisfactory as regards the length and position of the limb and the strength and stability of the union. I propose in the next case of amputation through the knee-joint to adopt a similar principle by constructing an angle between the condyles of the femur and paring the sides of the patella so as to fit into it.

c. Resection of right calcaneo cuboid joint.—Hindu male, *æt* 35. Admitted with caries of the joint between the os calcis and cuboid, It was exposed by a straight incision, the diseased surfaces removed by a gouge and the

wound dressed antiseptically. He left hospital with sound foot in 50 days.

4. *Erasion of the tarsus*.—i. Mahomedar male, *æt.* 4. This child had fever two years ago followed by swelling of the right foot, resulting in an abscess which burst and left two sinuses below the ankle, through which carious bone could be felt. The outer sinus was laid open; a mass of carious os calcis removed; the walls of the cavity in which it lay and the other sinus were thoroughly scraped with a sharp spoon and the wound dressed antiseptically. The cavity filled up with granulation material, and cicatrised soundly in 84 days.

ii. Hindu female, *æt.* 10. Similar history. Sinus lead to the calcaneo-astrogaloid joint which was disorganized. Under similar treatment a satisfactory result was obtained in 56 days.

* * * These cases illustrate the benefit which is obtainable by carefully scraping in cases of caries and subsequent antiseptic dressing. The operation of *Erasion* is now recognised as an efficient substitute for resection in many cases of joint disease, and is a further step in the direction of conservatism. Much depends on the constitution of the patient, some failures in the next section show.

IV.—OPERATION ON BONES.

1. *Partial Excision for Necrosis (Sequestrectomy)* (a) *Upper jaw*.—Mahomedan male, *æt.* 20. Had fever 15 months ago, followed by abscess of right cheek. There are two orifices through the bridge of the nose externally and beneath the upper lip internally, leading to loose necrosed bone. The upper lip and cheek

were raised, the necrosed bones removed, and the cavity in which they lay thoroughly scraped. This healed kindly by granulation, and a plastic operation was performed in 15 days to close up the aperture at the root of the nose.

(b) *Lower jaw*.—Mahomedan male, *æt.* 24; an unhealthy lad with enlarged spleen; suffered from gumboil six months ago which turned into a large abscess requiring three external incisions. Sinuses remain at the site of these leading to loose dead bone. The sinuses were enlarged, several fragments of dead bone removed, and several loose teeth extracted. He made a good recovery in 31 days.

(c) *Sternum*.—i. Hindu male, *æt.* 30. Abscesses appeared about the middle of the sternum two years ago, leaving three sinuses which are lined with soft granulation material, and lead to rough bare bone. The sinuses and an abscess situated to right of them were laid open and scraped by sharp spoon. The carious sternum was also removed by gouge and osteotrite. ii. A second operation of similar character was required in about three months. The parts were in process of satisfactory repair when patient absconded after a stay in hospital of 155 days.

(d) *Ribs*.—Hindu male, *æt.* 31. Necrosis of 6th and 7th right ribs, result of abscess 10 months ago, following fever and dysentery. Sinuses enlarged, and sequestra removed; recovered in 42 days.

(e) *Carpus*.—Hindu male, *æt.* 45. Abscess of right carpus five months ago, following fever. The trapezoid and cuneiform have already been removed through a sinus on the dorsal

aspect of the wrist through which other dead carpal bones can be discovered. This sinus was freely enlarged, and the os magnum, part of scaphoid and end of second metacarpal bone were removed. The cavity was thoroughly scraped and rendered aseptic. A satisfactory result was obtained in 58 days.

(f) *Femur*.—i. Native Christian, *æ*t. 31. Had an abscess of the left thigh, about seven years ago. A sinus has remained on the outer aspect ever since, which is found to lead to bare bone. The sinus was enlarged, bits of sclerosed bare bone were removed by chisel and the cavity scraped. The sinus healed, but broke open again and bare bone was discovered. He grew tired of treatment, and left hospital after a stay of five months.

ii. Hindn male, *æ*t. 2. Abscess above left knee five months ago, resulting in sinus leading to dead bone. A cloaca was found which was enlarged, and a sequestrum was removed and the cavity in which it lay thoroughly scraped. The child was removed in 72 days before the wound had completely healed.

* * * Cases of bare sclerosed femur resulting from deep periosteal abscesses are extremely tedious and difficult. Free and early opening of deep abscesses of the thigh prevents the occurrence of this troublesome condition; but once established there is nothing for it but enlarging the sinus, chipping and scraping away the hard bone, draining the cavity, keeping the part at rest, attending to the general health and exercising patience which is very requisite.

(g) *Knee*.—Mahomedan male, *æ*t. 32. 2

weakly lad who had had his knee-joint resected in 1886. A sinus broke out in the centre of the incision about 10 months after discharge, and carious bone was detected through this. The sinus was enlarged, and several bits of carious bone removed; the cavity was scraped, dressed antiseptically and drained. Symptoms of phthisis appeared about a month after admission, and he died of this disease in 138 days.

(h) *Tibia*.—i. British seaman, *æt.* 63. Long standing cario-necrosis of lower end of left tibia, several bits of dead bone removed, and the cavity thoroughly scraped and treated for granulation. He left hospital after more than a year's stay. The tibia which had undergone great thickening has resumed its natural dimensions and the cavity had almost cicatrized. He was advised to go to a temperate climate, as the process of repair was extremely slow.

ii. Hindu male, *æt.* 12. Right tibia, of traumatic origin, seven years' duration, sinuses leading to loose dead bone. These were removed and the cavity thoroughly scraped. Made a good recovery in 54 days.

iii. Hindu male, *æt.* 30. Necrosis of left tibia caused by an abscess 12 months ago. A loose sequestrum was removed, and the cavity scraped and dressed antiseptically. A second operation became necessary, but success was eventually obtained.

iv. European male, *æt.* 13. Strumous subject. Sustained a fall five months ago, followed by suppurative periostitis of left tibia, resulting in extensive necrosis of the shaft. Three incisions had been made before admission

through which bare bone was readily discovered. An incision was made along the anterior aspect of the tibia from epiphysis to epiphysis and 12 sequestra were removed, the cavity was scraped and dressed antiseptically. It remained aseptic, and partial closure of the wound resulted. The central portion of it, however, failed to heal; sinuses remained filled with very vascular granulations, and after five months a second operation became necessary to remove some sequestra which still remained. This belongs to the list of 1888.

v. Hindu male, *æt.* 15. Caries of internal malleolus of right leg, caused by an injury sustained 12 months ago, followed by abscess and persisting sinus. The bone is greatly thickened and the probe passes freely into a cavity lined by rough dead bone. This cavity was laid open, and the diseased bone thoroughly removed by a gouge, the cavity being subsequently smoothed down by an osteotrite. The wound was dressed antiseptically for granulation. The granulations which grew were gelatinous and were bulky, and the area of disease extended.

vi. About $3\frac{1}{2}$ months after the first, a second and more thorough removal of diseased tissue was made in the same way, but it soon became evident that the gelatinous disease implicated the ankle and tarsus, and amputation of the leg at the lower third finally became necessary. (See V, 8, ii). Suitable constitutional treatment was employed while these local measures were being carried out.

i. *Metatarsus*—i. Hindu male, *æt.* 40. Got his left foot hurt five years ago. An abscess formed

from which a sinus resulted, which has gradually enlarged into an ulcer, leading to diseased bone (5th metatarsal). The diseased bone was removed and the gelatinous granulations thoroughly scraped away. The resulting wound healed in 88 days, and the use of the foot was restored.

ii. East Indian male, *æ*t. 44. A heavy piece of iron fell on his foot, causing compound comminuted fracture of the metatarsal bone of his left foot and gangrene of the toes. These fell off, and the necrosed pieces of bone came away with exception of the first, which required an incision to expose and remove it. A good foot resulted. He remained in hospital 104 days.

2. REFRACTURE OF FEMUR.

Hindu male, *æ*t. 13. Broke his right thigh nine weeks ago. It has united with inversion and great angular distortion. The bone was easily refractured at the angle by placing the knee against it and making outward traction at the lower end of the femur. It was put up in a long splint with extension. Straight union took place, but in endeavouring to bend the stiffened joint, epiphysial separation took place at the upper extremity of the tibia and fibula. This necessitated reapplication of splints. He eventually left the hospital with a useful limb and power to bend the knee over right angle.

AMPUTATIONS FOR INJURY.

1. *Primary amputation of the arm.*—i. Hindu male, *æ*t. 12. Machine accident. Right hand torn off at the wrist; forearm and lower third of arm hopelessly lacerated. Amputation performed by the modified circular method; a long

posterior flap being stitched to a short anterior. The wound healed by first intention. Dressings were changed thrice; the drainage tube removed on the 9th and stitches on the 14th day. He left hospital 17 days after admission.

ii. Hindu male, *æ*t. 15. Machine accident. Right arm torn off at upper third. The sound skin which remained was fashioned into flaps, and the muscles and bone divided circularly at a sufficient height to permit of easy apposition of edges. Wound remained aseptic and healed by first intention. Drainage tube and stitches removed on 11th day. Discharged 27 days after operation.

2. *Primary amputation of the thigh.*—Hindu male, *æ*t. 25. A mass of earth fell on his left leg eight hours before admission, forcing the lower end of the femur through a ragged wound at the back of the thigh; great laceration and bruising of soft parts and stripping of bone.

Amputation performed through middle third by long anterior and short posterior flaps. Remained aseptic and healed by first intention except at two points through which the bare rim of the bone could be felt; these eventually healed without exfoliation. Discharged with an artificial limb in 70 days.

3. *Primary amputation of the metacarpal bone.*—Mahomedan male, *æ*t. 28. Machine accident. Right hand badly smashed, thumb and part of 1st phalanx of index finger saved, all the other fingers removed near the carpo-metacarpal joints, and flaps taken from what remained of the skin of the palm and dorsum. Parts remained aseptic, healing took place, principally

by granulation, in 45 days. Thumb and remains of forefinger useful for prehension.

4. *Secondary amputation of the arm for spreading traumatic gangrene.*—Mahomedan female, *æt.* 25. Admitted with compound fracture of the lower end of radius. Spreading traumatic gangrene appeared on fourth day reaching as far as the elbow. Amputation was performed through the middle of the arm by the circular method. The wound healed by first intention; drainage tube and wire stitches removed on 12th, and horse-hair stitches on 8th and 9th days. Left hospital 23 days after admission with a sound thumb. *Thumb.*

5. *Secondary amputation of the leg for gangrene.*—Mahomedan male, *æt.* 55. Sustained compound fracture of left leg eight days ago. Soft parts gangrenous, tibia extensively bared; amputation by double flaps (modified circular) at the “seat of selection;” wound underwent putrefaction, and central part of posterior flap sloughed. A satisfactory result was however obtained in 41 days.

AMPUTATIONS FOR DISEASE.

6. *Amputation of the thigh for sarcoma.*—Hindu male, *æt.* 24. Sarcoma of outer aspect of right thigh and of popliteal space, latter growing upwards among the hamstring muscles; of two years’ growth. Amputation performed at upper third of thigh, and some enlarged glands removed by a straight incision below Poupart’s ligament. Wound healed by first intention. Left hospital with an artificial leg in 57 days.

7. *Amputation of the leg for epithelioma.*—i. Mahomedan male, *æt.* 18. Cancerous ulcer at

lower half of right leg of nine months growth. Amputation at seat of selection by modified circular method. Wound remained aseptic and healed by first intention. Discharged in 41 days.

ii. Hindu male, *æ*t. 30. Suffered from fever at the age of 8, which was followed by symmetrical gangrene of the feet, causing pathological amputation through the metatarsus on right side and tarsus on left. Injured the face of left stump a year ago, and since then a cancerous growth has formed on it. Amputation was performed at the lower fourth of the leg. The wound remained sweet and healed by first intention. The left knee-joint, which was bent at an angle of 120° on admission, was straightened; and he left hospital able to walk with an artificial limb in 51 days.

8. *Amputation of the leg for diseased ankle*.
—i. East Indian female, *æ*t. 23. Had been under treatment for caries of left tarsus three years ago. The disease has recurred in an aggravated form, rendering amputation of the leg at its lower fourth necessary. The amputation wound healed aseptically in 23 days and she was provided with a cylindrical boot and discharged in 50 days.

ii. Hindu male, *æ*t. 18. Two operations for caries of the tibia and ankle having failed to extirpate the disease (see IV, 1, (h) v. vi.) the foot was removed by amputation a short way above the ankle. The wound healed by first intention. He was detained in hospital altogether 226 days, but was able to leave about a month after the amputation.

9. *Amputation above the ankle (Syme's) for disease of the ankle joint.*—i. Hindu male, *æt.* 30. Diseased left ankle joint of four months' standing. Amputation of foot by Syme's method; an opening was made in the heel flap for insertion of drainage tube. The wound healed by first intention, but a sinus remained which took a long time to heal. Complete repair was not obtained until he had spent 188 days in hospital. He then left with a sound stump capable of sustaining the weight of the body.

ii. Hindu male, *æt.* 50. Senile caries of right ankle joint tarsus and lower end of tibia of two years' duration. Amputation of foot by Syme's method. Owing to age and feeble constitution repair was very slow, and sinus persisted for months. A satisfactory result was eventually obtained.

iii. Hindu male, *æt.* 20'. Caries of left ankle joint and tarsus of one year's standing. Foot amputated by Syme's method. Repair very slow. Remained in hospital nearly five months. A good stump finally resulted.

10. *Amputation of the metatarsal bones for necrosis.*—Hindu male, *æt.* 50. Admitted with a large abscess of the left foot, pointing on the dorsum, of one month's duration through the cavity of which the second metatarsal joint runs. The third metatarsal was also partially stripped and rough. The second toe and its metatarsal were removed, and the third metatarsal partially resected. The wound healed by granulation in 102 days, and a serviceable foot remained.

* * The only circumstance demanding special notice connected with these amputations is the absence of mortality among 15 consecutive cases. This is a rare experience in the Medical College Hospital, and may, in the light of the past surgical history of the institution, be fairly credited to the careful employment of antiseptics.

VI.—REMOVAL OF TUMOURS (BY EXCISION)

A. MALIGNANT TUMOURS.—1. *Removal of recurrent cancerous glands.*—Hindu male, *æ* 48. A case of cancer of the face and lower jaw (2. c.), in which a gland at the posterior border of the sterno-mastoid muscle underwent enlargement and induration six weeks after the first operation. It was removed, and the patient left hospital apparently well, and has not since been heard of.

2. (a) i. *Epithelioma of the cheek.*—i. *East Indian male, æt. 55*; a mammillated growth on the inside of right cheek of seven months' duration, caused by the irritation of a bad tooth. The tooth was extracted, and the growth thoroughly removed, a portion of the cheek being taken along with it. An enlarged sub-maxillary lymphatic gland was at the same time extirpated. The parts were carefully stitched, and healed by first intention. No sign of recurrence when he left hospital 36 days after operation.

ii. *European male, æt. 49*; a very heavy smoker. A leucomatous patch formed on the inside of the right cheek between the teeth, which appears to have degenerated into an epithelioma about six months ago. The right cheek was divided from the angle outwards, and

the diseased mucous membrane thoroughly removed by scissors. Suspicious looking tissue was also removed from the root of the tongue, anterior pillar of fauces and angle between the jaws. A few hours after the operation free bleeding took place, which was stopped by putting a catgut loop round the facial artery, as it crossed the lower jaw. The wound healed by first intention. Some closure (atresia) of the jaws took place during cicatrization. He has been seen repeatedly since the operation, and no recurrence has taken place.

(b) *Epithelioma of the tongue*.—European male, *æt.* 50; a hard smoker; noticed a small growth on the left margin of the tongue 15 months ago, which has gradually increased and recently ulcerated; the growth was undoubtedly cancerous and involved only the left half of the tongue; floor of the mouth and fauces free; no glandular complication. A straight incision was made from the symphysis of the lower jaw to the hyoid bone below the chin, the aponeurosis of the mylo-hyoid muscle divided and the left half of the tongue isolated by the finger and scissors. The loop of a chain ecraseur was carried through the submental wound round the root of the left half of the tongue, which was severed slowly and removed without bleeding. The wound healed kindly, and patient was able to leave hospital in 20 days. He has been seen repeatedly since then, and no recurrence has taken place. He articulates distinctly.

(c) *Epithelioma of the lower jaw*.—Hindu male, *æt.* 48. Disease of seven months' duration,

implicated left cheek, left ramus and the skin over the left sub-maxillary triangle. A triangle of skin was taken from the cheek and side of the neck, including the diseased parts, the lower jaw divided at the symphysis and angle, and removed with the overlying and underlying diseased parts. Skin was taken from the right side of the neck and from behind and below the left ear to fill up the gap. Two diseased glands were removed—from over the hyoid bone and behind the sterno-mastoid. The wound healed kindly. It became necessary subsequently to remove a lymphatic gland lower down (see VI, 1, above). The patient was discharged after a stay of 80 days in hospital.

(d) *Epithelioma of the chest wall.*—Hind male, *æt.* 35. Sustained a severe burn of the chest wall at the age of five. Four months after the scar began to ulcerate, and there is now a large cancerous sore 5 in. \times 2 on the front of the chest. The movements of the arms are impaired by cicatricial bands extending across the axilla in front. The epithelioma was thoroughly removed, and flaps taken from the sound skin in the neighbourhood to fill up the gap. The arms were liberated by the same operation. A very satisfactory result was obtained in 66 days.

(e) *Epithelioma of the scrotum.*—Hind male, *æt.* 48. A lump appeared on the right side of the scrotum 10 months ago, which has grown to the size of an egg, and presents the appearances of a cancerous growth. The rest of the scrotum was somewhat hypertrophied; penis healthy. The skin of the scrotum

was dissected off as for scrotal tumour, and the right testicle, which was found to present a suspicious nodule, removed. The left testicle was healthy, and was stitched into a pocket with catgut. The wound healed kindly, and patient left hospital without any sign of recurrence in 34 days.

Epithelioma of the penis and scrotum.—i. Hindu male, *æ*t. 45. Disease commenced three years ago on the glans. It has now implicated the whole body of the penis, the adjacent surface of the scrotum, both testes and the inguinal glands of both sides. The corpora cavernosa were divided at the crura, and the corpus spongiosum in the perinæum, and the penis entirely removed. The diseased scrotum and testes were taken away, and the inguinal glands dissected out. The operation was very formidable and bloody, and the patient died of shock 14 hours after its completion.

ii. Hindu male, *æ*t. 50. Disease of eight months' duration; implicates the body of the penis, the surrounding skin, the inguinal glands on both sides and the skin covering them. The penis was amputated near the root; the corpus spongiosum was left longer than the cavernosa; the diseased skin was removed from the scrotum and groins, and the inguinal glands extirpated. The scrotum was split in the centre and carried up to the margin of the pubic wound to which it was stitched, the urethra being attached to the lower angle of the wound. The parts underwent repair in 45 days; the scrotal flaps adhering by first intention to the pubis, and the rest of the wound healed by granulation. No

sign of recurrence was observed when the patient left hospital, and he was able to micturate comfortably.

iii. Mahomedan male, *æt.* 35. Congenital phimosis followed by gonorrhœa six years ago. The cancer seems to have commenced about two years ago. Disease confined to the penis; inguinal glands enlarged on both sides. The penis was removed near the root; the corpus spongiosum being left longer than the cavernosa and stitched to the lower angle of the wound. The parts healed in 23 days. The swelling of the inguinal glands subsided.

9. *Epithelioma of the rectum.*—East India male, *æt.* 58. Disease of six months' duration involving the perinæum and adjacent portion of the scrotum, the anus, and the rectum to a depth of about $1\frac{1}{2}$ inches; extending farther up on the posterior aspect. An incision was made through the skin, and subcutaneous areolar tissue beyond the limits of the growth, till the ischio-rectal fossæ were reached; the rectum was divided by scissors beyond the reach of the disease internally, and its edges brought down and stitched to the skin. The parts healed by granulation in 61 days. He had some control over the anus when he left hospital, and there was no sign of recurrence.

* * * These cases of epithelioma were so far successful that the patients recovered (with one exception) from formidable operations, and manifested no immediate recurrence of the disease. They have, as is usually the case in this country, been lost sight of, and it is impossible to ascertain whether the relief was permanent.

ment, or to what extent life was prolonged. The causes of death in the fatal case were age, feeble vitality, and severe mutilation causing shock.

3. (a) *Sarcoma of the axilla*.—Hindu male, *æ*t. 50. A large tumour of three months' growth, occupying the left chest and axilla, extending from left clavicle down to left nipple and from left margin of the sternum to the posterior fold of the axilla. A long horizontal incision was made from the nipple to the shoulder and a vertical incision at right angles to it to the posterior fold of the axilla. The surface of the tumour was exposed by dissection, and its deep attachments which extended far into the axilla cautiously severed. The branches of the brachial plexus had to be dissected out, and the surface of the pectoralis major latissimus dorsi and serratus magnus cleaned. The tumour weighed $2\frac{1}{2}$ lbs. The wound healed by first intention in 18 days. Patient fell into an exceedingly low state, from which he slowly recovered. He left hospital apparently well 86 days after the operation; but presented himself sometime afterwards with a recurrence *in situ*, which was deemed beyond the reach of operation.

(b) *Sarcoma of the testicle and cord*.—Hindu male, *æ*t. 30. Sustained an injury of right scrotum 10 months ago, which resulted in a swelling of the testicle, which is now as large as a bael fruit, tense, tender and fluctuating; the outer coverings are healthy, and the testicle can be obscurely felt posteriorly. On tapping the distended tunica sanious fluid issued mixed with small masses of curdy material resembling

the clot in hæmatocele. Under the impression that the disease was of this nature, a free incision was made, and a quantity of sanguineous fluid with masses of soft pulpy solid removed. Profuse bleeding ensued, and on examining the solid material, it was found to present the character of sarcoma. Patient was at once chloroformed and castration performed. The cord was found to be infiltrated as far as the internal inguinal ring. The inguinal canal had to be laid open. A long wound remained, the greater part of which healed by first intention. He left the hospital with the parts soundly healed, and no sign of recurrence in 37 days.

B. NON-MALIGNANT TUMOURS.

1-a. *Elephantiasis of the scrotum.*—Hindu *æt.* 40; 16 years' duration. Removed in the usual manner; large hæmatocele on right side and hydrocele on left. Tunica emptied and pared off close to the testicle. Suffered from shock, succeeded by excessive reaction, (temperature rising quickly to 104° ,) which proved fatal in 16 hours. Weighed 10 lbs. 3 oz.

ii. Hindu, *æt.* 30. Eight years' duration preceded by hydrocele. Usual operation. 2 pint 7 oz. of fluid removed from right and 2 oz. from left tunica. Wound remained sweet; recovered in 56 days. Tumour weighed 2 lbs.

iii. Hindu, *æt.* 47; 11 years' duration; usual operation; wound remained sweet and healed in 37 days. Tumour weighed 25 lbs. 4 oz.

iv. Hindu, *æt.* 22; 14 years' duration; usual operation; wound remained aseptic and healed in 44 days. Weighed 2 lbs. 7 oz.

v. Hindu, *æt.* 30. Four years' duration.

removed in the usual manner ; small hydroceles. Wound healed aseptically in 67 days. Weighed 2 lbs. 4 oz.

vi. Hindu, *æt.* 20 ; 12 months' duration ; usual operation ; small hydroceles ; wound granulated aseptically in 76 days. Weighed 1 lb. 7 oz.

vii. Hindu, *æt.* 42. History of bubo and chancre 15 years ago, followed by gradual formation of tumour ; usual operation ; double hydrocele ; recovered in 62 days. Weighed 1 lb. 6 oz.

viii. Hindu, *æt.* 21. Two years' duration, preceded by hydrocele ; usual operation. Left hospital in 57 days. Weighed 2 lbs. 10 oz.

ix. Mahomedan, *æt.* 30. Three years' duration, following hydrocele ; usual operation ; left tunica contained two pints of fluid. Remained in hospital 98 days. Weighed 6 lbs. 12 oz.

x. Mahomedan, *æt.* 48. Eight years' duration, preceded by hydrocele ; usual operation. Hæmatocele on right side, hydrocele on left. Left hospital in 94 days. Weighed 18 lbs. 7 oz.

xi. Hindu, *æt.* 20. One year's duration, usual operation ; small right hydrocele ; left tunica adherent. Recovered in 80 days. Weighed 2 lbs. 4 oz.

xii. Hindu, *æt.* 21. Nine years' duration ; usual operation ; small hydroceles. Recovered in 76 days. Weighed 1 lb. 8 oz.

xiii. Hindu, *æt.* 55 ; 35 years' duration. Recent rapid growth. Very large tumour, reaching four inches from the ground. Removed in the usual way. Patient became low during the operation, and artificial respiration had to

be resorted to. He made a good recovery : 84 days ; wound healed aseptically. Tumor weighed 56 lbs.

xiv. Hindu, *æt.* 35. Three months' duration ; usual operation ; small hydroceles. Discharged in 81 days. Weighed 1 lb. 6 oz.

xv. Hindu, *æt.* 28. Eight years' duration. History of hydrocele. Removed in the usual manner. Recovered in 91 days. Weighed 3 lb.

xvi. Hindu, *æt.* 50. Six years' duration. History of hydrocele ; usual operation. Tunic calcareous ; dissected off. Recovered in 64 days. Weighed 9 lbs. 2 oz.

* * * This series is chiefly remarkable for the satisfactory recoveries which all the patients made with one exception. A mortality of 6 per cent. is very low when cases are not very rigidly selected. Some of the tumours were of good size (56, 25 and 18 lbs.) ; many of the patients were advanced in years ; some in different health, and a few of them confirmed opium-eaters. Still none of them gave cause for the slightest anxiety with the exception noted. The plan of operation was the same that which I have pursued for some years, as described fully in my work on " Operative Surgery " and article on Scrotal Elephantiasis Heath's Dictionary. Great care was taken in applying the first dressing, and the deep dressing was left undisturbed for 10 or 12 days, the other being removed as often as it was " soaked. The scrotal part of the wound generally healed in three or four weeks, but delay takes place in the cicatrization of the penis, more particularly when care is taken, as it should be, to preserve

the length, and isolation of the organ with a view to future use.

(b.) *Elephantiasis of the labia.*—Mahomedan, *æt.* 30; $5\frac{1}{2}$ years' duration, following gonorrhœa and chancre, the labia majora and minora and preputium clitoridis are hypertrophied. The redundancies were carefully removed, and a satisfactory result obtained in 28 days.

2. *Osteocystoma of lower jaw.*—Hindu male, *æt.* 35. Tumour of 25 years' growth, involves right half of lower jaw. Overlying skin ulcerated; general health indifferent. The right half of the bone was removed by division at the symphysis and disarticulation. Symptoms of septicæmia appeared on the third day, and the disease proved fatal on the 9th. The wound became sloughy and gaped.

3. *Removal of enlarged cervical glands.*—Hindu male, *æt.* 30, a native of Nepaul, has suffered from strumous enlargement of the glands on the right side of the neck for five months; four sinuses exist, leading to the sub-maxillary parotid and deep cervical glands. These were enlarged, and the glands, which were in a state partly of caseation and partly of suppuration, were removed by finger and director. The operation was somewhat formidable, and was followed by considerable shock; the wounds were treated antiseptically and healed by granulation in 104 days.

4. *Removal of diseased inguinal glands.*—i. East Indian male, *æt.* 26. Obstinate enlargement of left inguinal glands following chancre. They were exposed by incision and removed by finger. The wound healed in 38 days.

ii. East Indian male, *æ*t. 56. Left inguina glands enlarged to the size of a foetal head they were exposed by crucial incision and extirpated. The wound healed by first intention and he left hospital in 35 days.

5. i. *Removal of Papilloma of the foot.*—Mahomedan male, *æ*t. 35. Got a thorn into the sole of left foot three months ago. It was cut out and a warty growth formed at the site which has grown to the size of a walnut and is pigmented on the surface. It was removed together with a liberal margin of adjacent skin, and flap taken from the neighbourhood. These adhered and sound repair was obtained in 38 days.

ii. *Warty growth on leg.*—Hindu male, *æ*t. 45. Case of elephantiasis of left leg, in which there is a large mass of warty growths in front of the ankle, greatly impeding locomotion. These were removed by oval incision, together with a triangular piece of the subjacent elephantiasis down to the fascia. There was very free bleeding, and it was found difficult to secure the vessels in the hard elephantoid tissue. Twelve bits of skin were stitched on the surface of the wound. These “took” and the sore healed in six weeks.

iii. Two months after the first operation similar removal of warty growths from behind the ankle was made and with success. He left hospital four months after admission with free and painless movement of the ankle joint.

6. *Removal of a keloid mass from the chest.*—Hindu male, *æ*t. 16. The growth situated over the manubrium, is about the size of a small lemon and appeared after a boil. It has recent

ly undergone suppuration. It was removed by suitable incisions, and flaps were taken from the neighbourhood to fill up the wound. Gaping took place and repair was slow. Discharged in 83 days.

7. *Removal of Condyloma of the rectum.*—Hindu male, *æt.* 50. A number of ulcerated tumors surround the anus which is thickened and strictured. They were freely removed by scissors, including about an inch and a half of the gut, the edge of which was brought down and stitched to the skin. Repair took place in 51 days. The control over the *fæces* was imperfect.

7. i. *Removal of hæmorrhoids.*—East Indian male, *æt.* 35. Large internal and external piles removed by clamp and cautery. Satisfactory result in 17 days.

ii. Hindu male, *æt.* 30. Five large internal piles removed by clamp and cautery. Discharged in 13 days.

iii. East Indian female, *æt.* 46. Internal and external piles removed by scissors after Whitehead's plan. Wound healed in 57 days.

iv. Mahomedan male, *æt.* 55. Very large partially strangulated internal pile and smaller external pile which is fissured and ulcerated. Condition very miserable. Removed by Whitehead's method. Satisfactory result in 22 days.

v. European male, *æt.* 35. Three internal piles removed by Whitehead's plan. Discharged in 30 days.

vi. Jewish male, *æt.* 30. Internal and external piles of five years' duration, bleeding badly; removed by Whitehead's method. Wound healed in 10 days.

* * The method of removal by scissors, as proposed by Whitehead, is easy of performance and, though repair is tedious in some cases, the final result is satisfactory. Bleeding can very easily be controlled by forcipressure, and, if necessary, by ligature.

VII.—REMOVAL OF CALCULI.

i. *Prostatic Calculus removed by incision.*—Mahomedan male, *æt.* 25. Has suffered from signs of stone since childhood. Symptoms have recently become aggravated. A stone was detected in the prostatic portion of the urethra which was removed by perinæal section. It weighed 3 drs. 49 grs. On exploring the bladder, a large stone was found to occupy it, too large to be removed through the perinæum, accordingly—

2. i. *Suprapubic lithotomy* was performed at once, and a stone weighing 6 oz. 11 grs. was removed. A drainage tube was passed through both wounds. The suprapubic portion of it was first withdrawn, and the tube shortened and when this wound healed, the remainder of the tube was removed from the perinæal wound. This eventually healed, and patient left hospital in good health after a stay of 64 days.

ii. Hindu male, *æt.* 30. Admitted with retention of urine. Had passed a calculus in childhood and suffered severely from urinary troubles since then. Two small calculi were removed from the urethra, and a small stone was then detected in a firmly contracted and very irritable bladder; the urethra was very narrow. Suprapubic lithotomy was performed without previous distension of either rectum or bladder.

and a small phosphatic calculus weighing 6 drs. was removed, together with several fragments of lesser size. He began to make water through the penis 33 days after the operation; and the suprapubic wound having closed, he was discharged in 49 days.

3. *Litholapaxy.* i. Mahomedan male, *æ*t. 50. Symptoms of four months' duration. A stone whose debris weighed 1 oz. 20 grs. was removed by five crushings and evacuations. Left hospital in five days.

ii. Hindu, *æ*t. 30. Symptoms of two years' duration. A stone whose debris weighed 4 drs. 20 grs., removed by seven introductions of litho-rite and evacuator. Left hospital in 10 days.

iii. Mahomedan, *æ*t. 40. Symptoms of 22 months' duration. Debris weighed 1 dr. 20 grs. Six introductions. Suffered from cystitis. Discharged in 17 days.

iv. Hindu male, *æ*t. 37. Symptoms of 12 months' duration. Debris weighed 3 drs. Four introductions. Left hospital in 8 days.

v. Same patient re-admitted two months after discharge with persisting symptoms of stone. A fragment weighing 1 dr. was found, and crushed and removed by three introductions. Left hospital the same day.

4. *Lateral lithotomy.* — Mahomedan male, *æ*t. 6. Symptoms for two years. A small oxalic stone weighing 1 dr. 23 grs. was removed by lateral lithotomy. He was discharged in 20 days.

VIII.—INCISIONS.

1. *Tracheotomy.*—Hindu female, *æ*t. 36. Has suffered from strumous laryngitis for two years, and had great difficulty of breathing for

eight days. Tracheotomy was performed above the isthmus; immediate relief was obtained. The tube was worn for eight days, and the wound healed within a week after its removal.

2. *Operations for strangulated hernia* — Hindu male, *æt.* 30. Left oblique inguinal hernia of six months' duration, irreducible for two days. Local and general symptoms of strangulation well marked. Sanguineous serum escaped on puncturing the sac with a fine trocar. Very low; tongue dry; pulse scarcely perceptible. Sac laid open; stricture divided, and the intestine, which was ecchymosed and highly congested, returned; neck of sac tied. A rupture was found at the fundus. Pillars brought together and wound stitched. Died of exhaustion shortly after completion of the operation.

ii. Hindu male, *æt.* 50. Has had right oblique inguinal reducible hernia for 25 years. The rupture descended about an hour before admission, and could not be returned. Ice was applied and taxis tried repeatedly. Five and a half hours after the descent, symptoms of strangulation becoming more apparent, the sac was laid open, the stricture was divided, and a considerable length of congested intestine and mesentery returned. The sac was dissected out; the neck tied, and the rest cut off. The pillars were sutured, an opening made in the scrotum, and the wound stitched. He left hospital in 22 days with his hernia to all appearance radically cured.

iii. Mahomedan male, *æt.* 60. Has suffered from right oblique reducible inguinal hernia for 30 years. Came down 15 hours before admission, and could not be returned. Ice and tax-

were tried in vain, and chloroform was administered 24 hours after descent; the neck of the sac exposed by incision, the stricture divided, and the contents returned without opening the sac. The wound was stitched and healed by first intention. He left hospital in 21 days, and was provided with a well fitting truss, which acted efficiently.

4. *Operations for the radical cure of hernia.*—

i. Hindu male, *æt.* 24. Right reducible inguinal hernia of three years' duration. Ring large; health good. Sac dissected out, tied at the neck, and removed; pillars brought together with catgut. Opening for drainage made in the scrotum. Got erysipelas on the 3rd day, and died of exhaustion on the 9th.

ii. Hindu male, *æt.* 30. Reducible right oblique inguinal hernia of two years' duration. Irreducible for 24 hours on admission. Reduced by ice and taxis. The usual operation of dissection, ligature and removal of sac was performed four days afterwards. The wound healed by first intention, and he was discharged apparently cured in 24 days.

iii. Mahomedan male, *æt.* 30. Left reducible oblique inguinal hernia (epiplocele) of six months' duration. Operation as in preceding cases. Wound healed by first intention; two small sinuses remained, through which catgut knots came. Discharged cured in 42 days.

iv. Hindu male, *æt.* 24. Reducible right oblique inguinal hernia of two years' duration. Same operation. Two sacs were found in this case — one recent, and one old. The wound suppurated, and a small abscess formed in the

scrotum. The parts eventually healed well, and he was discharged apparently cured in 42 days.

v. East Indian male, *æt.* 20. Reducible right oblique inguinal hernia of two years' duration. Usual operation. The wound putrefied and suppurated. An abscess formed in the right flank, which resulted in a very obstinate sinus. Patient remained under treatment for 200 days but eventually made a satisfactory recovery.

vi. Hindu male, *æt.* 30. Reducible left oblique inguinal hernia of $1\frac{1}{2}$ years' duration. Usual operation. Wound healed by first intention. Discharged in 36 days.

vii. Hindu male, *æt.* 41. Irreducible right oblique inguinal hernia. Sac laid open, and found to contain omentum, which was adherent to its interior in three places. These adhesions were divided after ligature and the omentum returned. The operation was then completed in the usual manner. The wound suppurated and healed by graulation. He was discharged cured in 75 days.

viii. Mahomedan male, *æt.* 30. Reducible right oblique inguinal hernia of six months' duration; occurred during an attack of dysentery. Usual operation performed; recovered in 24 days. Suffered from dysentery for a few days after operation.

ix. Hindu male, *æt.* 30. Left oblique inguinal hernia of six months' duration; irreducible for 24 hours on admission. It was returned after application of ice, and the usual operation for radical cure was performed three days afterwards. He was doing well when tetanus appeared on the 8th day and proved fatal in 27 hours.

* * The operation performed in these nine cases was that which has been minutely described in previous papers. The mortality 2 in 9 is very high, and resulted from surgical accidents not special to this class of cases. In two cases convalescence was delayed by suppuration. The result of operation seemed to be quite satisfactory in all seven cases when they left the hospital; none of them have been seen or heard of since.

5. *Incision for hæmatocele.*—i. Hindu male, *æt.* 30. Hydrocele of two years' standing; was injured a month ago, since when it has become tense, hard and very painful. An abscess was found at the fundus of the scrotum and opened. The hæmatocele was also laid open, its contents removed, the cavity syringed with bichloride of mercury lotion and stuffed lightly with boracic lint. The wound had nearly healed when the patient absconded 54 days after operation.

ii. Jew, *æt.* 19. Injured his right testicle two years ago. It swelled in two days, and has continued hard, painful, and swollen ever since; hæmatocele diagnosed on admission. The tunica was laid open as in the preceding case. The cavity was closed by granulation in 54 days.

6. (a) *Perinæal section with a guide.*—i. Mahomedan male, *æt.* 50. Has suffered from pain and trouble in making water for one month. A gritty sensation was found in the prostatic urethra on sounding. A grooved staff was passed and perinæal section performed. About $2\frac{1}{2}$ grains of phosphatic débris were removed with the scoop end of a director from the prostatic urethra. The perinæal wound healed in 18 days.

ii. Hindu male, *æt.* 36. History of gonorr-

rhœa and stricture followed by abscess and fistula in perinæa. The urethra was fully dilated, but another abscess formed, and perinæal section was resorted to. He was discharged cured in 52 days. Recovery was delayed by epididymitis and scrotal abscess. A full-size instrument was passed every fourth day.

iii. Hindu male, *æt.* 60. Suffered from gonorrhœa sometime ago. An abscess formed in the perinæum a fortnight ago, resulting in three urinary fistulæ—one in the perinæum and two in the left buttock. Urethra admits No. 12 instrument. The perinæum and membranous urethra were divided, and a full-size instrument passed occasionally. He recovered in 35 days. Epididymitis and rectal dysentery occurred during convalescence.

iv. Hindu male, *æt.* 30. Gonorrhœa 12 months ago, followed by an abscess at the root of the penis, which resulted in a fistula, for the cure of which a plastic operation was performed in vain. A perinæal section was performed for the purpose of entirely diverting the stream of urine, and giving the fistula, the edges of which were at the same time freshened, an opportunity of closing. The fistula contracted greatly, but did not undergo perfect occlusion. A few drops still escaping under the full pressure of micturition.

(b) *Perinæal section without a guide* (Coccygæ operation.)—i. Hindu male, *æt.* 50. Admitted with sloughing of the scrotum consequent on fever. Suffering also from stricture of the urethra. An abscess found in the perinæum. He suffered from retention, in the endeavour to relieve which a false passage was made. The

abscess was evacuated, and the prostatic urethra laid open by the same operation. An instrument was at the same time passed through the urethra from behind forwards; it would not pass in the opposite direction owing to the false passage. After a stay of 43 days, he left hospital with the scrotal and perinæal wounds cicatrised and urethra fully dilated. A full-sized instrument had been passed every fourth day.

ii. Hindu male, *æt.* 56. Gonorrhœa 10 years ago, followed by stricture. Admitted with retention. Catheterism had been tried without effect. The prostatic urethra was opened by Cock's method, the bladder emptied, and stricture divided. A full-sized instrument was occasionally passed, and he left the hospital quite cured in 4 days.

iii. Hindu male, *æt.* 30. Gonorrhœa five years ago, followed by stricture. Admitted with retention. A false passage had been made in the attempt to relieve it. The same treatment was adopted as in the last case with similar result in 38 days.

iv. Mahomedan male, *æt.* 35. Gonorrhœa 16 years ago, followed by stricture. Perinæal abscess formed a fortnight ago, accompanied with great swelling of the scrotum and abdominal wall. Bladder distended on admission; urine dribbling; a free incision was made in the perinæum, evacuating the abscess and entering the urethra. The stricture was also divided, and two incisions made in the fundus of the scrotum. He made good recovery in 31 days.

v. European male, *æt.* 30. Gonorrhœa three years ago, followed by stricture. Suffering from

retention, in attempting to relieve which false passages had been made. Cock's operation was performed, and the stricture divided at the same time. He made a good recovery in 3 days; the urethra admitting No. 14 catheter.

vi. Hindu male, *æt.* 49. Gonorrhœa 10 years ago, followed by stricture. Had retention seven years ago, relieved by catheterism. For the last two months the urine has been dribbling, and bladder distended. A catheter was passed 2 days ago, followed by bleeding. On admission bladder found distended with decomposed urine and clots; prostate enlarged; urethra lacerated patient very low; the perinæum was freely opened; and the bladder washed out. He died of exhaustion about an hour after the operation.

vii. Hindu male, *æt.* 18. Ruptured his urethra by a fall on a brick about an hour before admission. Blood issuing from urethra perinæum swollen; catheter could not be passed. The perinæum was at once divided; a No. 1 entered into the bladder through the urethra and a Syme's S-shaped catheter retained. Left the hospital quite well in 46 days. A full-size instrument was passed every third day to maintain the potency of the urethra.

viii. Hindu male, *æt.* 40. Gonorrhœa eight years ago. Symptoms of stricture for four months, complete retention for 45 hours. Catheterism failing, the urine was removed by aspiration. The catheter could then be passed, but false passage was discovered. This rendered frequent catheterism impossible, and the bladder was entered by Cock's method, and Syme's catheter retained for three days. He made a good recovery.

covery in 63 days, and left hospital with the perinæal wound closed and urethra of full capacity.

ix. Hindu male, *æt.* 5. Admitted with extravasation of urine. Dribbling of urine, with swelling of penis and scrotum, observed two days previously. Complete retention for 12 hours. The bladder was opened through the perinæum, and free incisions made into the swollen parts. Very extensive sloughing took place. The patient suffered from low fever, and became delirious on the 13th day, and died shortly of exhaustion. The cause of the extravasation could not be discovered. No calculus was found, nor was there a tight phimosis.

x. Hindu male, *æt.* 44. Fracture of the base of the skull and cervical spine, and rupture of urethra caused by a bag of castor-oil seed falling on his neck. Bladder distended; clear urine drawn off by a small trochar. Catheter could not be passed, and blood welled from urethra. The bladder was reached through the perinæum and emptied, and a soft instrument tied in. He died of the injuries of the skull and spine 20 hours after the operation.

xi. Mahomedan male, *æt.* 50. Gonorrhœa followed by stricture. A perinæal abscess appears to have formed a week ago burst into the urethra and caused extravasation of urine. Free incisions were made into swollen parts. The bladder was entered through the perinæal incision. Considerable scrotal sloughing took place: he suffered from dysenteric diarrhœa and remained in a very low state for a long time. He left hospital eventually in 123 days with all the

wounds healed, and able to make water in full stream through the urethra.

xii. Hindu male, *æ*t. 40. Case of extravasation of urine due to recent gonorrhœa. Cock's operation performed and free incisions made into the œdematous parts.

He was detained 92 days in hospital, but left with all the wounds closed and urethra fully patent.

* * In 4 of these 16 cases an instrument could be introduced into the bladder, and external urethrotomy was performed in the usual way. One was a case of prostatic calculus, and the other three cases of perinæal fistula in which treatment by dilatation, or tying in did not offer much prospect of success. In the remaining 12 cases an instrument could not be introduced into the urethra, or it was considered inadvisable to make the attempt: in these cases Cock's operation is extremely valuable.

It is easy of performance and in itself perfectly harmless. One of the fatal cases (extravasation) was moribund on admission. Another case of extravasation died of blood-poisoning in a few days. The third (rupture of urethra) died of head and neck injuries. All the rest (two of perinæal abscess, four of retention and stricture one of rupture of urethra, and two of extravasation) made good recoveries. Care was taken to follow up the operation by regular catheterism. In several of the cases the inability to pass an instrument was due to false passages and lacerations, which had been made prior to admission.

7. *Lumbar colotomy*.—Hindu male, *æ*t. 30

Has had increasing trouble in passing stools for 14 months. No fæces have been voided for 26 days, and for several days no flatus has passed. Abdomen tender and tympanitic. Coils of distended intestine visible; pulse weak; tongue moist; temperature normal. A hard growth detected in the rectum, and an impermeable stricture beyond it. The descending colon was opened in the left lumbar region, and the edges of the opening stitched to the wound. Fæces and flatus were immediately voided, and continued to pass uninterruptedly during the 84 days he remained in hospital. The rectal growth underwent ulceration, and the inguinal glands became enlarged.

8. *Tenotomy for double talipes equino-varus*.—European child, *æt.* $2\frac{1}{2}$ years. The tendo achillis tibialis posticus and anticus, extensor longus digitorum and plantar fascia were divided on both sides, and by proper attention to position the deformity was satisfactorily corrected.

9. *Incision for stricture of the Rectum*.—Mahomedan male, *æt.* 45. There were tight annular bands due to cicatrization of dysenteric ulcers, and causing very severe stricture. The bands were divided towards the sacrum by a hernia knife, and the gut fully dilated by bougies. He remained under treatment 18 days.

10. *Large abscesses*—(a) *Axillary abscess*. An East Indian female, *æt.* 30. Duration eight days, following fever. Opened antiseptically under chloroform by Hilton's method. Discharged well in 30 days.

(b) *Iliac abscesses*.—i. Hindu male, *æt.* 10. Eight days' duration, following injury of hip

a month ago. Opened antiseptically below Poupert's ligament. Healed in 93 days.

ii. East Indian male, *æt.* 19. Duration 21 days, following fever. Suffered from abscesses over sacrum, and in the gluteal regions two months ago. Opened antiseptically below Poupert's ligament. Healed in 46 days.

(c) *Gluteal abscesses*.—i. Hindu female, *æt.* 25. Large deep abscess resulting from a fall five days ago. Opened and drained antiseptically. Healed in 29 days.

ii. Hindu male, *æt.* 20. Eight days' duration, following fever. Opened and drained antiseptically. Healed in 16 days.

iii. Hindu male, *æt.* 22. Eight days' duration, following punctured wound of foot; 8 oz. of pus evacuated antiseptically. Healed in 22 days.

iv. Hindu male, *æt.* 30. History of fall and subsequent 20-mile walk. Opened and drained antiseptically. Healed in 30 days.

v. Mahomedan male; 20 days' duration, following fever. Opened and drained antiseptically. Another abscess formed in the lumbar region, which was similarly treated. Discharged in 51 days.

(d) *Thigh abscesses*.—i. East Indian male, *æt.* 27. Duration 15 days following fever. Opened and drained antiseptically. On the 6th day he had a severe relapse of fever which proved fatal next day.

ii. East Indian male, *æt.* 18. A deep erysipelatous inflammation of right thigh arising in the course of fever. Suppuration occurring, the abscess was laid open. Three other abscesses

formed, of left thigh, and both gluteal regions, which were also opened. He left the hospital well in 70 days.

* * * These are a few out of a large number of abscesses treated during the year, whose size and depth gave the measures necessary for their treatment the right to be called "major" operations.

IX. REPARATIVE OPERATIONS.

1. *For cicatrix after burn.*—i. Hindu male, *æt.* 11. This boy sustained a severe burn 2½ years ago, which caused adhesion of the right arm to the chest wall, and flexion of the arm and forearm. He had undergone two previous operations, one in 1885 by Dr. Raye, and one by myself in 1886 (see "Précis" for that year X. 5. ii.) The forearm was still flexed on the arm, and retained in that position by a triangular cicatricial web. A similar web bound the arm to the chest, but the extremity had been considerably freed by the previous operations. On the 16th of March the triangular web connecting the arm and forearm was divided in the middle, and flaps were taken from the sides and placed on the flexor aspect of the elbow joint. These adhered, and the limb was gradually made straight.

ii. On the 20th of July, the other web was divided, and a large flap taken from the back and transplanted under the armpit. This partially sloughed, but enough remained to prevent reformation of a web. He left the hospital after a stay of 295 days in good health, and with much greater freedom of movement of the extremity.

iii. Mahomedan male, *æ*t. 15. Sustained a severe burn seven years ago, which caused adhesion of the left arm to the chest wall. A thick horny cicatricial plate covered the left half of the chest. This plate was removed by dissection, the skin connecting the arm to the chest posteriorly divided, and one edge stitched to the chest, and the other to the arm. Flaps were taken from the neighbourhood to close up the extensive raw surface left by these dissections. These for the most part retained their vitality and position. He left hospital in 40 days with a useful and moveable limb.

iv. Hindn female, *æ*t. 36. Sustained a burn five months ago which has caused the formation of a triangular cicatricial web binding the arm and forearm in a position of acute flexion. The web was split from base to apex, and flaps were taken from the sides of the arm and forearm, and stitched together over the flexor aspect of the elbow joint. The limb was fully extended during the process of union. She left hospital in 52 days with a limb restored to usefulness and free motion.

* * In all these cases the principle of operation was the same—namely, to split the web transversely and convert the transverse wound into a longitudinal one by extension. The dissecting off of hard cicatricial plates and the transplanting of flaps are necessary measures in severe cases. Case iii was a very satisfactory one, and although Case i was subjected to four severe operations, the loss of skin had been so great that the final result was not so satisfactory as might be wished.

2. *Operation for webbed fingers.*—Hindu female, *æ*t. 8. The middle and ring fingers of both hands are united by a complete web. Patient presents well marked signs of congenital syphilis. The webs were divided at different periods by an incision on the dorsal aspect of one finger and the palmar of the other. A flap was taken from the upper part of the web anteriorly and stitched between the fingers. Repair was slow, owing to the constitutional vice, but eventually a satisfactory result was obtained.

3. *Rhinoplastic operation.*—Mahomedan male, *æ*t. 20. Patient had undergone operation for necrosis of the upper jaw (see IV. 1. *a*.) A large hole remained at the root and side of the nose. Flaps were taken from the right cheek to close this aperture. The result was satisfactory.

X. OPERATIONS NOT CLASSED.—1. *Imperforate anus.*—Male infant, 2 days' old, closure complete. Rectum found about $1\frac{1}{2}$ inches from the surface, opened freely, brought down and stitched to the skin. Relief immediate. Removed in three days.

2. *Nerve splitting and stretching.*—Jew, *æ*t. 14. Anæsthetic leprosy. Left ulnar, musculo-spiral and median nerves much thickened, and the parts supplied by them quite anæsthetic and wasted. The thickened nerves were exposed, freely split in the direction of their axis and then stretched. The wounds healed by first intention, but no benefit was conferred by the operation.

GENERAL REMARKS.

Mortality.—The death-rate among the operations included in this paper, namely, 6·6 per

cent. of cases treated to the end is unprecedentedly small. The favourable result is not due to any change in the manner of record, nor any paucity of serious and severe cases as compared with previous years; but may fairly be claimed as a result of improvements in general hygiene and wound management, which have been carried out in recent years.

Death causes.—These hardly admit of general review, as they can hardly be arranged in groups. *Shock* accounts for two deaths, and was due to the combined effects of feeble constitution and severe operation.

Septicæmia caused three deaths, of which two were urinary cases, and the third, removal of a large tumour of the lower jaw.

The only case of fatal septic infection was one of erysipelas following an operation for the cure of hernia. The hospital has been singularly and happily exempt from this class of diseases during the year. Only one fatal case of post operation tetanus (also a hernia operation) occurred.

Antiseptics. — The same system of dressing wounds has been in use as in the preceding year. This has been fully described in previous communications. The spray was not employed in any case during the year, irrigation with carbolic and bichloride lotions being resorted to instead and with satisfactory result.

PRÉCIS OF OPERATIONS

PERFORMED IN THE

WARDS OF THE FIRST SURGEON, MEDICAL COLLEGE
HOSPITAL,

During the year 1888.

By BRIGADE-SURGEON K. MCLEOD, A.M., M.D., F.R.C.S.E.,
Professor of Surgery, Calcutta Medical College.

THE following tabular statement and notes are drawn up on precisely the same plan as the seven similar papers which have been published in this journal. The value of these communications is mainly cumulative and statistical, but a good deal of valuable clinical experience will be found here and there to which special attention is drawn. The summaries are prepared from careful notes taken by Assistant-Surgeon AKSHOY KRISHNA SHAHA, L. M. S., to whom I am greatly indebted for this service, as well as for the intelligent assistance he has given me both in the operating theatre and the wards.

Table of Operations performed during 1888.

Description of operation.

I. OPERATIONS ON THE EYE AND ITS APPENDAGES.

	No.	Died.
Partial removal of Sarcoma of orbit.	...	1 0

II. OPERATIONS ON ARTERIES.

For Traumatic aneurism of dorsalis pedis	...	1 0
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III. OPERATION ON VEINS.

		No.	Died
1	Division and ligature of varicose veins	...	2
2	For traumatic venous aneurism	...	1
Total		...	3

IV. OPERATIONS ON JOINTS.

1	Reduction of dislocation of shoulder-joint	...	1
2	Ditto ditto of elbow-joint	...	3
3	Forcible extension of stiff knee	...	4
4	Forcible flexion of stiff elbow	...	1
5	Excision of elbow-joint	...	1
6	Incision of knee-joint	...	1
Total		...	11

V. OPERATIONS ON BONES.

1	Partial excision of bones for necrosis (sequestromy)	...	7
2	Ditto ditto for compound fracture	...	3
Total		...	10

VI. AMPUTATIONS. A. *For Injury.*

1	Primary of forearm	...	1
2	Primary of thumb	...	1
3	Primary of fingers	...	3
4	Primary of foot (Chopart's)	...	1
5	Secondary of arm for tetanus	...	1
6	Secondary of arm for gangrene	...	2
7	Secondary of forearm for gangrene	...	2
Total		...	11

B. *For Disease.*

8	Amputation of the arm for gangrene	...	1
9	Of finger for necrosis	...	1
10	Of thigh for disease knee-joint and leg	...	1
11	Of leg for sarcoma of foot	...	1
12	Of leg for diseased foot and ankle	...	1
13	Above ankle (Syme's) for diseased foot and ankle	...	1

Total ... 6

Total Amputations ... 17

VII. REMOVAL OF TUMOURS BY EXCISION.

A. <i>Malignant.</i>			No. Died.	
1 Cancer	<i>a</i> of cheek ...	...	1	0
	<i>b</i> of tongue ...	...	1	0
	<i>c</i> of upper jaw ...	...	2	0
	<i>d</i> of lower jaw ...	...	1	0
	<i>e</i> of neck ...	...	1	1
	<i>f</i> of breast ...	...	6	0
	<i>g</i> of penis ...	..	4	0
	<i>h</i> of penis and scrotum ...	...	1	0
	<i>i</i> of rectum ...	...	1	0
	<i>j</i> of thigh ...	...	1	0
2 Sarcoma	<i>a</i> of lower jaw ...	...	1	0
	<i>b</i> of back ...	...	1	0
Total			21	1

B. <i>Non-Malignant.</i>				
1 Elephantiasis	<i>a</i> of scrotum ...	...	17	1
	<i>b</i> of labia ...	...	1	0
	<i>c</i> prepuce ...	...	1	0
2 Fibroma	of pharynx ...	...	1	1
3 Naso-pharyngeal	fibroma ...	...	2	0
4 Fibroma	of thigh ...	...	1	0
5 Epulis	... ..	...	1	0
6 Fatty tumour	of mamma ..	...	1	0
7 Glandular tumour	of mamma ...	...	1	0
8 Angioma	of scalp ...	...	1	0
9 Angioma	of left breast and anus	...	1	0
10 Cystic tumour	of scalp ...	...	1	0
11 Cystic tumour	of axilla ...	...	1	0
12 Keloid tumour	of thigh ...	...	1	0
13 Syphilitic condyloma	of anus ...	...	2	0
14 Diseased cervical	glands ...	...	1	0
15 Ditto	axillary glands ...	...	2	1
16 Ditto	inguinal glands	...	8	0
17 Piles	1	0
Total			45	4

Grand total of tumour	...	66	5
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VIII. REMOVAL OF CALCULI.

No. Died.

1	Prostato-vesical by perineal section	...	1	(
2	Vesical by suprapubic lithotomy	...	1	(
3	Ditto by median lithotomy	...	1	(
4	Ditto by litholapaxy	...	1	(
Total			4	(

IX. INCISIONS.

1	Laparotomy	...	...	...	1	.
2	Tracheotomy	...	...	...	2	(
3	For stragulated hernia (with opening sac)	...	...	...	7	.
4	For radical cure of hernia	...	...	...	8	(
5	Perineal section—					
	a with guide	...	...	...	7	.
	b without guide (Cock's)	...	...	...	4	.
6	For hæmatocele	..	...	...	1	.
7	For stricture of rectum	...	...	...	1	(
8	For atresia oris	...	...	...	3	(
9	For large abscesses	...	...	...	13	.
Total			...	47	1	.

X. REPARATIVE OPERATIONS.

1	Plastic of face	...	...	...	1	.
2	Rhinoplasty	...	...	...	1	.
Total			...	2	.	.

XI. OPERATIONS NOT CLASSED.

1	Castration	..	...	...	1	.
GRAND TOTAL			...	163	1	.

I.—OPERATIONS ON THE EYE AND ITS APPENDAGES.

1. *Partial removal of Sarcoma of orbit with extirpation of the globe.*—Mahomedan child, æt. 8. A small nodule appeared on the roof of the left orbit 4 months ago which has rapidly grown

to be a large tumour. The left eye is protruded and disorganised. Extirpation of the globe was performed and the outer angle of the lids incised to permit of exploration of the tumour. A portion of it which was comparatively loose was removed, but the main mass was found to spring from the orbital plate of the frontal bone and could not be removed. The wound was stitched and the cavity dressed antiseptically. Some constitutional disturbance followed the operation which subsided and the child was removed 16 days after the operation.

II.—OPERATIONS ON ARTERIES.

1. *For traumatic aneurism of dorsalis pedis.*
—Hindu male, *æt.* 22. Dorsum of left foot wounded by a piece of wood twelve days ago. Profuse hæmorrhage ensued, and when it stopped, a lump formed, which has been gradually increasing. It was found to be an aneurism. The cavity was laid open after an elastic cord had been applied above the ankle, a quantity of black clot turned out and the dorsalis pedis artery tied above and below. The operation was performed by Surgeon G. Jameson. The wound healed by granulation in 36 days.

III.—OPERATIONS ON VEINS.

I. *Division and ligature of varicose veins.*—
i. European male, *æt.* 28. Admitted with large varicose veins of right thigh, ham and leg. On the first occasion two of the veins were isolated and ligatured, and four divided and tied above and below with catgut. The wound healed aseptically in 20 days, and the veins between them underwent contraction.

ii. A few varicosities remaining, 3 more points

were selected, and the veins divided and tied. The wounds healed in 18 days, and he left the hospital to all appearance quite cured.

* * The plan of dividing and tying is much easier and obviously more radical than isolating and trying. The vein is simply pinched up by an assistant above and below the place of intended division, a cut made with a sharp knife through the fold of skin and vein. The divided ends are then seen, caught with a pressure forceps and ligatured. A couple of catgut stitches are finally placed in the small wound.

2. *Operation for traumatic venous aneurism.*—Hindu male, *æt.* 20. Sustained several cuts of right forearm by the bursting of a bottle eight months ago. The wounds bled freely, as well as forming a large aneurism at the site of one of them, which has been gradually enlarging. It is ovoidal in shape about the size of a large orange; situated about the middle of the anterior aspect of the forearm rather to the radial side; fluctuates, but does not pulsate; emits dark blood on puncture. No bruit; radial pulsation distinct, but rather weaker than on the opposite side. An elastic cord having been placed above the elbow the cavity was freely laid open, and found to contain laminated fibrinous clot, recent sanguineous clot and fluid (venous) blood. It was thoroughly emptied, and found to possess smooth walls. Two orifices were found on the anterior and outer aspect, which were secured by passing a catgut thread with a needle under them. The cord was then loosened, but no bleeding appeared. The wound was stitched, a large drainage tube being inserted in the cavity and dressed.

antiseptically. It healed in 21 days, mostly by first intention.

* * This is a very rare case—a hæmatoma caused by injury of a subcutaneous vein, probably the radial, behaving itself after the manner of an arterial aneurism.

The treatment adopted was the same as for traumatic (arterial) aneurism, and was quite successful.

IV.—OPERATIONS ON JOINTS.

1. *Reduction of the shoulder-joint.*—Mahomedan male, *æt.* 32. Downward dislocation of eight days' duration reduced by manipulation. Left hospital same day.

2. *Reduction of dislocation of elbow-joint.*

i. Hindu male, *æt.* 29. Broke the inner condyle of left humerus five days ago. Elbow-joint much swollen. On subsidence of the swelling in about a week, dislocation backwards of the radius was discovered and rectified. The arm was kept on a rectangular splint for four weeks and then passive movement was resorted to. He was discharged with a useful joint in 32 days.

ii. Mahomedan female, *æt.* 40. Sustained fracture of lower end of right humerus, with dislocation backwards of ulna 22 days ago. Limb straight. No movement at elbow. The dislocation was reduced under chloroform, and the elbow kept at rest at a right angle till swelling subsided. Passive movement was resorted to after a week, and she left with a useful moveable joint in 27 days.

iii. European male, *æt.* 27. Sustained fracture of external condyle of right humerus and

dislocation backwards of head of radius by a fall. Reduction was effected under chloroform, and the limb kept in splints for sometime. Passive movement was then resorted to, and a useful joint was eventually obtained.

* * In these three cases, fracture and dislocation co-existed; the principles of treatment consisted in—1st, reduction of both fracture and dislocation; 2nd, fixation until the fracture had undergone union, and 3rd, passive movement as soon as that had taken place. Owing to the filling up of the olecranon and coronoid fossæ with callus, the range of flexion and extension is apt to be impaired in these cases, sometimes permanently. Douching, massage and passive movement are the best means of treatment.

3. *Forcible extension of stiff knee-joint.*—

i. Hindu female, *æt* 16. Suffered from arthritis of right knee-joint in consequence of fever. Joint swollen, somewhat tender, patella fixed, leg remains at an angle of about 150° with thigh. The joint was partially straightened under chloroform, and the process of stretching was continued by means of a McIntyre splint. The limb was then put up in a starch bandage, and patient encouraged to use it. She was under treatment for 36 days, and left with a stiff knee-joint but straight limb.

ii. Hindu male, *æt*. 30. Suffered from gonorrhœal arthritis eight months ago. Right knee-joint stiff and swollen, and leg fixed at an angle of 120° . Treatment as in the previous case. Left hospital with a straight and useful limb in 77 days.

iii. Hindu male, *æt*. 25. Admitted with pop-

leteal abscess and stiff left knee-joint, the leg being fixed at a right angle. The abscess was cured in 49 days, and then the leg was stretched. A fear occurred across the back during the process of stretching. This healed kindly, and he left hospital with a straight useful limb after 67 days' further treatment.

iv. Hindu female, *æ*t. 30. Knee-joint fixed at an angle of 125° , in consequence of an attack of rheumatic arthritis of four months' duration, patella immovable. The joint was stretched under chloroform, put on a McIntyre splint for 18 days, and then in a gum and chalk bandage. She left hospital with a useful limb in 81 days.

4. *Forcible flexing of stiff elbow joint.*—Hindu female, *æ*t. 45. Right elbow-joint stiffened in a straight position, and bones of forearm partially dislocated backwards. Forcible flexion was made under chloroform. The olecranon process gave way during the operation. The joint was fixed at a right angle till the pain and swelling subsided, and passive movement then resorted to. She left hospital with a useful limb after 9 days' treatment.

5. *Excision of the elbow joint.*—East Indian male, *æ*t. 6. Admitted with an open elbow-joint consequent on injury sustained two months previously. The joint was resected by Surgeon G. Jameson. The wound healed mostly by granulation, and he left hospital 19 days after the operation with a movable joint.

6. *Incision of the knee-joint.*—Hindu male, *æ*t. 70. Admitted with his knee-joint distended with pus consequent on suppurative synovitis occurring during fever. An incision was made

into the joint by Surgeon G. Jameson. A large quantity of pus was evacuated, the joint cavity washed out with perchloride of mercury lotion (1 in 2,000), and a drainage tube inserted. The tube was gradually shortened, and he left hospital in 26 days with a healthy useful joint.

V. OPERATIONS ON BONES.

1. *Partial excision for necrosis (sequestrotomy).*

(a) *Lower jaw.*—i. Hindu male, *æt.* 30. Necrosis of lower jaw, resulting from an injury sustained five months ago. The sinus and cloaca were enlarged, and a piece of bone extracted. The wound healed by granulation in 28 days.

ii. Hindu male, *æt.* 45. Similar case. Left hospital in four days with a granulating wound.

(b) *Ulna.*—Necrosis of left ulna of two months' duration. Sequestrum removed and cavity scraped out by gange and osteotrite. Wound healed by granulation in 88 days.

(c) *Femur.*—East Indian male, *æt.* 30. Sinus of upper and back part of right thigh leading to bare and loose bone, consequent on abscess due to injury sustained two months ago. Small sequestrum removed and cavity laid open. Left hospital with a granulating wound, which has since healed, in 11 days.

(d) *Tibia.*—i. Hindu male, *æt.* 38. Got a periosteal abscess of right tibia during fever one-and-a-half years ago. There are several sinuses leading to dead bone. Several sequestra were removed, after dividing the soft parts and enlarging the cloacæ. The cavity was cleaned by an osteotrite. The wound healed by granulation in 69 days.

ii. European male, *æt.* 13. Underwent a

severe operation for necrosis of left tibia in 1886 (see precis for that year IV 1. h. iv). Two sinuses remained five months after it, through which dead bone could be detected. These were laid freely open and several sequestra and much debris removed. He still remains in hospital; the wounds having not yet healed.

iii. Hindu male, *æt.* 20. Acute necrosis of left tibia, consequent on an attack of fever a year ago. The greater part of the shaft of the bone had died, and two long incisions were necessary for exposure and removal of the fragments. He remained in hospital 152 days, and was finally discharged with a sound leg.

* * * The removal of flabby granulations and debris by means of the gouge, sharp spoon and osteotrite was found necessary in most of these cases. Thoroughly cleaning the cavity containing the sequestra in this manner greatly accelerates subsequent repair, and most frequently, in combination with antiseptic irrigation, renders the wound aseptic. The application of the elastic cord in these cases minimises loss of blood and gives a good view of the parts during operation. It is a good plan to stuff the wound and bandage the part before removal of the cord. On removing these provisional dressings in about a quarter of an hour, the oozing is generally slight and easily stopped.

2. *Partial excision of bones for compound fracture.*—i. Mahomedan male, *æt.* 13. Compound fracture of lower end of right humerus and simple fracture of radius and ulna caused by a fall off a tree. The upper fragment of the

humerus protended through the wound, and about an inch of it had to be sewn off to permit of reduction. The wound putrified and inflamed, spreading cellulitis, and severe constitutional disturbance ensuing. An abscess formed in front of the shoulder joint which had to be opened. After 70 days' treatment a satisfactory cure was obtained.

ii. East Indian male, *æt.* 31. Fell off the terrace of a house and sustained compound fracture of both bones of left forearm at the middle, and a simple comminuted fracture lower down. The ends of the bones were resected, and several loose fragments removed. The wound was carefully washed out with perchloride lotion, and the limb put upon a splint. Symptoms of tetanus set in five days after the accident; amputation of the arm was performed next day—(see VI. 5 below) which failed to stay the progress of the disease.

iii. Hindu male, *æt.* 11. Sustained compound fracture of both bones of left forearm above the wrist, by a fall off a mango tree, two months ago. A sinus leads to bare bone at the lower end of the radius; there is thickening of the ulna and much deformity. A straight incision was made over the radial border of the wrist and several fragments of dead bone extracted. A straight incision was also made on the opposite side, through which a wedge of ulna was removed. The deformity was then rectified, the wounds were dressed antiseptically and the arm put up in splints. A satisfactory result was obtained in 43 days.

VI.—AMPUTATIONS.

A.—AMPUTATIONS FOR INJURY.

1. *Primary amputation of forearm.*—Hindu male, *æt.* 12. Compound comminuted fracture of left forearm, with extensive laceration of soft parts. Machine accident. General health good. Amputation by modified circular method below the elbow-joint. Healed by first intention. Discharged in 35 days.

2. *Primary amputation of thumb.*—Hindu male, *æt.* 30. Thumb crushed in a jute mill. Removed together with head of metacarpal bone. Wound healed in 22 days.

3. *Primary amputations of fingers.*—i. European sailor, *æt.* 24. Clutched the blade of a knife in his left hand, and got severely cut across the middle of the middle ring and little fingers. Sustained several other severe wounds. The first interphalangeal joint of the little finger having been laid open, the digit was removed at the metacarpo-phalangeal joint. The flexor sheath of the middle and ring fingers having been laid open and both flexor tendons divided, the sheaths were slit up and the tendons stitched together with catgut. The fingers were kept straight by splints. The wounds remained aseptic, but the tendons sloughed and parted. They contracted adhesions lower down than they would have done without operation and a useful hand resulted. Some degree of flexion and grasping power remained. Was detained in hospital 40 days.

ii. Hindu male, *æt.* 27. All the fingers of left hand crushed in a mill. The middle and ring fingers had to be removed at the metacarpo-

phalangeal joints. The other two were badly lacerated, but were preserved and the thumb was not injured. Recovered with a useful hand in 29 days.

iii. Mahomedan male, *æt.* 30. Right ring finger crushed by a machine. It was amputated. Wound healed in 14 days.

4 *Primary partial amputation of the foot (Chopart's).*—Severe incised wound of right foot, dividing it across with exception of the skin of the sole. Amputation was performed through the intertarsal joint and a long flap taken from the sole. This partially sloughed, but a good stump resulted, the wound healing by granulation. Remained in hospital 33 days. There was some pulling upwards and backwards of the heel, but he would not submit to tenotomy.

5. *Secondary amputation of the arm for traumatic tetanus.*—East Indian male, *æt.* 31. Sustained a compound comminuted fracture of the forearm at its upper third and simple fracture of the lower third by a fall from a second storey. Symptoms of tetanus set in while he was under treatment in hospital six days after receipt of the injury. Removal of the injured parts was considered advisable, and amputation through the middle of the arm was performed. The disease pursued an acute course, notwithstanding the free administration of chloral hydrate and bromide of potassium; the temperature rose, the pulse became quick and feeble, and he died of exhaustion 36 hours after the operation.

6. *Secondary amputation of the arm for traumatic gangrene.*—i. Hindu male, *æt.* 30. Sus-

tained a compound fracture of the right forearm nine days before admission by the passage of a cart wheel over the limb. The whole arm was œdematous and the wound gangrenous. He had considerable constitutional disturbance. Both local and general conditions getting worse, the arm was amputated at the middle by the modified flap method. He continued to suffer from fever and symptoms of septicæmia for a fortnight. The stitches gave way and the bone protruded; the cavity of the wound was eventually closed by granulations, which covered the end of the bone and drew the flaps together. He left hospital 34 days after operation, with a good and sound stump.

ii. Mahomedan female, *æt.* 60. Admitted with a long lacerated wound of the outer side of right arm and forearm caused by a carriage accident. She was a very old thin, feeble woman, and gangrene set in, necessitating amputation of the arm at its lower third. This was done by the circular method. She remained low and delirious for some days, and the wound, which remained aseptic, healed very slowly. She was discharged 49 days after operation.

7. *Secondary amputation of the forearm for traumatic gangrene.*—i. Mahomedan male, *æt.* 40. Fell off a mangoe tree from a height of 25 feet, 15 days before admission; sustained a compound comminuted fracture of the forearm. The bones are bare and soft parts gangrenous. Amputation was performed by Surgeon G. Jameson below the elbow by modified circular method. The result was satisfactory. He was discharged 28 days after the operation.

ii. Native Christian male, *æ*t. 40. Fore-arm crunched by a tiger seven days ago. Parts gangrenous. Amputation was performed at the upper third by the modified circular method. The flaps became œdematous and wound putrid and considerable constitutional disturbance existed during the first week. It became necessary to remove the stitches, and treat for granulation, which slowly filled the wound cavity and brought the flaps together. He remained 73 days in hospital.

B.—AMPUTATIONS FOR DISEASE.

8. *Amputation of the arm for gangrene.*—Mahomedan male, *æ*t. 45. Admitted with gangrene of right hand and forearm, resulting from a witlow of the thumb. Amputation was performed just above the elbow, the humerus being sawn through the condyles. The wound healed mostly by first intention, and he was discharged in 22 days.

9. *Amputation of finger for necrosis.*—Mahomedan male, *æ*t. 50. Was bitten in the right ring finger by a woman, $2\frac{1}{2}$ months ago. Finger disorganized by resulting inflammation, and an unhealthy sinus extending into the palm. The finger was removed at the metacarpo-phalangeal point, and the sinus slit up and scraped. Repair by granulation took place in 38 days the final result being very satisfactory.

10. *Amputation of thigh (lower third) for diseased knee and leg.*—Hindu male, *æ*t. 40. Admitted with stiff knee and ankle; numerous sinuses of leg leading to bare bone and open suppurated and disorganized knee joint. Amputation was performed at the lower third by

long anterior and short posterior flaps. The wound remained aseptic and healed by first intention. A small phlegmon formed in the anterior flap which required opening. He was discharged 32 days after the operation.

11. *Amputation of leg for sarcoma of foot.*—Hindu male, *æ*t. 38. Admitted with a fungating tumour of dorsum of left foot of eight years' growth. It was almost fixed and the surrounding skin was thickened and dusky. Amputation was performed above the ankle by the modified circular plan. The wound remained aseptic, and healed by first intention. Discharged in 42 days.

12. *Amputation of the leg for diseased foot and ankle.*—Hindu male, *æ*t. 35. Foot and ankle riddled with sinuses leading to carious bone; general health indifferent. Disease of five months' duration. Amputation performed by modified circular method at lower third of leg. Lips of wound healed by first intention, but the cavity was very slowly filled up, two sinuses at the corner remaining open. He was eventually discharged 67 days after operation, with a sound stump and able to sustain the weight of his body on a hollow cylindrical boot.

13. *Amputation above the ankle (Syme's) for diseased foot and ankle-joint.*—Hindu male, *æ*t. 18. Admitted with several sinuses leading to bare bone; ankle-joint undergoing disorganization. Syme's amputation performed in the usual manner. An opening made in the heel flap for drainage. The lips of the wound healed by first intention, but the drainage openings closed very slowly. He was detained in hospital for 174 days, and eventually left with a sound callous stump.

* * The only circumstance demanding special remark connected with these amputations is the small death-rate. In the only fatal case, death was due to tetanus which the removal of the injured part failed to modify and remove. In many of the cases the conditions were by no means favourable for success.

VII.—REMOVAL OF TUMOURS (BY EXCISION)

A. MALIGNANT. 1. (a.) *Cancer of Cheek (epithelioma)*.—Hindu male, *æ*t. 45. Commenced about $3\frac{1}{2}$ months ago as a nodule on the inside of the left cheek. It is now a tuberculate, sloughy ulcer about two inches long and an inch broad. Sub-maxillary lymphatic glands enlarged. A straight incision was made from the angle of the mouth to the ear, and the growth dissected out by scissors, including a liberal margin of subjacent and surrounding healthy tissue. A vertical incision was made from the middle of the transverse cut, and the enlarged sub-maxillary glands removed through it. The wound was then carefully stitched, and a drainage tube inserted through its lower angle. It healed by first intention in eight days. Patient was retained for 12 days longer to permit of occasional application of the screw gag, in order to prevent closure of the mouth.

(b.) *Epithelioma of the Tongue*.—Hindu male, *æ*t. 38. Disease of six months' duration involves the anterior 2-3rds of the tongue, which is indurated and ulcerated. A straight incision was made from the symphysis pubis to the centre of the body of the hyoid bone. The anterior bellies of the digastric were separated, and

the tendons raphe of the mylo-hyoid divided. The genio-hyoid muscles were then separated, and the finger carried upwards and backwards on each side between them and the genio-hyo-glossi which were isolated, and their genial attachment nipped across by scissors. The mucous membrane of the floor of the mouth was then divided by scissors as far back as the fauces, and the chain of an ecraseur introduced through the sub-mental wound, and applied to the root of the tongue just in front of the epiglottis. The whole tongue was removed with very little loss of blood by slowly tightening the chain. A large drainage tube was finally introduced through the sub-mental wound. Patient was fed with a funnel and tube introduced through the nostril, and then through the mouth for ten days. The wound healed in 21 days, and he left hospital 29 days after the operation with no sign of recurrence; able to feed comfortably and speak intelligibly.

* * * I have removed the whole and half of the tongue in several other cases by the method described. The organ is practically isolated by dissection and separation, and the mucous membrane of the mouth detached as far back as the fauces before any blood can enter the mouth. The tongue can be very completely extirpated by this method. The sub-mental wound serves for drainage and prevents lodgment of putrid material in the cavity of the mouth or entry of the same into the stomach or lungs. There was little or no constitutional disturbance in this case.

(c.) *Cancer of Upper Jaw.*—i. Hindu male.

æt. 35. Disease of two years' duration. The tumour protrudes through the right nostril which is blocked. The right upper maxilla is involved. It was removed in the usual way Fergusson's incision being employed. The wound healed by first intention except below the inner angle of the eye where some suspicious skin was removed. A small bit of bone (floor of orbit) came through this, and a flap had to be taken from the cheek to close the aperture. He was discharged in 63 days with the wound quite healed, and no sign of recurrence of the tumour.

ii. Mahomedan male, *æt.* 45. Malignant tumour of left upper jaw of two years' duration consequent on injury; skin not implicated. The whole jaw was removed in the usual way. The wound healed by first intention. The left eye got inflamed and a small ulcer formed on the cornea which eventually healed. He was furnished with an artificial palate, and left hospital 23 days after operation.

(d.) *Cancer of the lower jaw and cheek.*—Hindu male, *æt.* 32. The disease commenced eight months ago as a malignant epulis of left lower jaw. There is now a crateriform ulcer of left cheek reaching the bone, and surrounded by a large halo of infiltration. There is a nodule in front of the right masseter and the sub-maxillary lymphatic glands on both sides are enlarged and indurated. A very extensive operation was required to remove the diseased parts. An incision was made from the left angle of the mouth upwards and backwards to the ear. The lower lip was bisected down to the chin, and the

incision then carried to the angle of the right jaw. A straight cut was made in front of the left ear half way down the neck, and an oblique incision from the end of this across the thyroid cartilage to the right angle of the lower jaw. This bone was divided at this spot and on the left side high up through the ramus. The soft parts included by these incisions were dissected off deeply, the tongue being held forwards and vessels secured by pressure forceps as divided and afterwards tied. The diseased lymphatic glands were removed; large flaps were taken from the neck and what remained of the left cheek to fill up the gap and the mouth widened by an incision into the right cheek. The operation was followed by considerable shock, and that by smart reaction. He was fed by enemata for two days, and then by tube through the mouth. The wound healed mostly by first intention, and he was able to leave hospital in a month, with a few sinuses remaining at the angles of the flaps. He has been seen repeatedly since then. There is no sign of recurrence (four months after operation). It became necessary to remove the teeth of the left side, because they caused ulceration of the right flap. His general health has improved since the operation. He talks intelligibly, and is able to swallow liquid and soft solids.

* * * This was a very extensive and formidable operation. The patient, a medical man, was made fully aware of its nature and risk, and urged its performance. Considerable deformity of face has resulted, but the present condition is

comparatively comfortable, and life has been prolonged, to what extent it is impossible to predict.

(e.) *Large Cancerous Tumour of the Neck.*—Mahomedan male, æt. 25. This was a very large tumour of nine years' growth, consisting of two masses, one the smaller below the chin, and on the right side of the jaw (submaxillary triangle) and the other over and below the parotid region. The skin was adherent, partly œdematous and ulcerated in one place. The interior of the tumour was broken up into several cyst-like cavities. It moved freely on subjacent tissues. It was removed in two portions. The anterior part was first dissected out and then the posterior. The dissection was difficult and deep, and the bleeding very considerable, notwithstanding prompt use of pressure forceps. The removal of the posterior part implied partial ablation of the parotid gland and exposure of the sheath of the vessels. A large gland was taken from under the sterno-mastoid and several others were discovered deep in the neck, which were not interfered with, being left for future operation, if patient survived. The wound was stitched, drainage tubes inserted, and an antiseptic dressing applied. Patient sank in to a state of collapse twice during the operation and hypodermic injection of ether had to be resorted to. He was profoundly low after operation. Stimulants warmth and other restoratives were used; some signs of reaction were observed, but he sank $3\frac{1}{2}$ hours after completion of the operation. Microscopic examination showed the structure of the tumour to be cancerous.

(f.) *Cancer of the Mamma.*—i. Hindu, *æt.* 50. Scirrhus of three years' duration; ulcerated and sloughy; axillary glands affected. The diseased gland was removed with a large area of diseased and doubtful skin. The axilla was thoroughly cleared of glands, and flaps were taken from the side of the chest to fill up the large gap left by removal of the tumour. The wound healed partly by first intention and partly by granulation. There was little constitutional disturbance, and she left hospital apparently well, in 41 days.

ii. East Indian, *æt.* 42. Scirrhus of five weeks' duration; very painful and involving the whole of the left breast. Axillary glands also affected. The mamma was entirely removed and axilla emptied of its glands. The edges of the wound came together and healed by first intention. Some suppuration took place in the track of a metallic stitch, and caused a little gaping of the centre. This delayed recovery and she was detained 41 days in hospital.

iii. Hindu, *æt.* 60. Scirrhus of left breast and axillary glands of four months' duration. Breast and glands were removed, and the wound healed mostly by first intention. Discharged 41 days after operation.

iv. Hindu, *æt.* 45. A very hard scirrhus of right mamma and axillary glands of eight months' duration. The breast was removed and axilla cleared out by Surgeon Jameson. The operation was followed by considerable depression, but she rallied and made a good recovery in 18 days; the wound healing by first intention.

v. East Indian, *æt.* 47. Recurrent cancer

of left breast. The mamma had been removed $2\frac{1}{2}$ months previously. About a month ago two lumps appeared, one on each side of the scar; axillary glands diseased. The diseased mass was removed by Surgeon Jameson including a suspicious portion of the pectoralis major and the axilla emptied of glands; the wound healed slowly in about a month.

vi. Same subject. Some nodules made their appearance in and around the cicatrix, and were removed 67 days after the previous operation. The wound healed kindly, and she was discharged apparently well 41 days after this operation.

(g.) *Cancer of the Penis*.—i. Hindu male, *æ*t. 40. Disease of one year's duration, implicating pupuce and glans; inguinal glands on both sides enlarged. Penis amputated by Hilton's method, the corpus spongiosum being left about $\frac{1}{4}$ th inch longer than the cavernosa. The fibrous septum and capsule of the latter were stitched together with catgut. The inguinal glands were extirpated. Recovered in 37 days.

ii. Hindu male, *æ*t. 50. Disease of one year's duration. Penis removed at the root as in last case. Recovered in 31 days.

iii. Hindu male, *æ*t. 24. Phagedænic ulcer with indurated floor following venereal sore contracted six months ago and extensively destroying the penis. The diseased parts were removed and recovery took place in 143 days, cicatrization being delayed by recurrence of unhealthy action in the sore.

iv. Hindu male, *æ*t. 50. Disease of two years duration. Penis amputated at the root as in case i. Recovered in 28 days.

(h.) *Cancer of the Penis and Scrotum*.—Hindu male, *æt.* 45. Disease of $1\frac{1}{2}$ years' duration, implicated the whole of the penis, the scrotum and testes. The scrotum was first bisected in order to ascertain the state of the corpus spongiosum and testes. The incision was carried back to within half-an-inch of the anus. The corpus spongiosum was dissected out and held back. A circular sweep was then made at the root of the scrotum. The cords were tied, and both testes which were found to be infiltrated were removed with the scrotum. The penis was extirpated by scraping the crura off the rami of the pubes. The corpus spongiosum was finally stitched in the posterior angle of wound. Patient suffered from severe shock, but rallied and made a good recovery in 57 days; the wound healing by granulation; the urethra was kept patent by frequently passing a catheter.

* * * This was a very severe operation, and might more fitly be called extirpation than amputation of the penis. The only other operation of equal severity, which I have performed, died of shock in 14 hours. (See *Précis* for 1887.)

i. *Cancer of the Rectum*.—Hindu male, *æt.* 45. The disease surrounded the anus and extended outwards for about half-an-inch. A circular incision was made outside of the diseased area, and the mass removed by means of a curved scissors. The bleeding which was very free was controlled by the use of pressure forceps. Ten points were tied. The edges of the skin and mucous membrane of the rectum were brought together by a few catgut sutures. The wound

healed by granulation in 61 days. No recurrence had taken place when he left hospital.

(j.) *Cancer of the Thigh*.—East Indian female *æt.* 65. A cauliflower growth on the inside of thigh two inches in diameter, of six months' duration, removed by Surgeon Jameson, together with a liberal margin of surrounding tissue. Recovered in 16 days.

2. a. *Osteo-sarcoma of the lower jaw*.—Hindu male, *æt.* 35. A globular tumour of left side of lower jaw of one year's duration. Ulcerated internally. The jaw was divided at the symphysis and disarticulated. The wound healed mostly by first intention. Discharged in 18 days. The tumour was found to be an osteo-sarcoma originating from the bone and commencing to soften in places.

b. *Sarcoma of the back*.—European male, *æt.* 53. A tumour of the back about the size of a hen's egg which proved to be a sarcoma of nine months' duration removed by incision. Wound healed by first intention. Patient discharged in 16 days.

B. NON-MALIGNANT TUMOURS.

1. a. *Elephantiasis of the Scrotum*.—i. Burmese, *æt.* 32. Ten years' duration. History of chancre and bubo and periodic fever. Removed in the usual manner. Wound granulated aseptically in 133 days. Weighed 18 lbs. 12 oz.

ii. East Indian, *æt.* 40. Five years' duration. History of syphilis and periodic fever. Usual operation. Tunicae adherent. Discharged in 82 days. Weighed 1 lb. 6 oz.

iii. Hindu, *æt.* 30. One and a half year's duration. History of periodical fever. Usual

operation. Right tunica contained 8 oz. of fluid. Recovered in 79 days. Weighed 1 lb. 12 oz.

iv. Hindu, *æt.* 30. One year's duration. Double hydrocele. Usual operation. It was followed by great constitutional disturbance. The wound putrefied; blood poisoning ensued. Death by exhaustion occurred 20 days after the operation. Tumour weighed 1 lb. 6 oz.

v. Mahomedan, *æt.* 45. Admitted with a large scrotal tumour of 12 years' growth; its transverse circumference was 46 inches and antero-posterior 44 inches. When he stood it reached to within 6 inches of the ground. There was a history of gonorrhœa and syphilis, and about 25 years ago he was tapped and injected for hydrocele. Has been suffering from fever lately; is weak, and emaciated, and a confirmed opium eater. Operation was at first declined owing to the man's exceedingly feeble cachectic condition, but a small orifice appeared on the right scrotum through which in two days about 15 lbs. of grumous fœtid pus escaped, and as the right half of the tumour was found to be an immense abscess cavity, it was thought best to remove the whole mass. The usual operation was performed, but the right testicle was removed with the mass, the left being secured in a pocket as usual. About 15 lbs. of pus came out of the abscess cavity, and a large hæmatocele with very thick walls was found on the right side, outside of which but not communicating with it the abscess had formed. The man was low after operation, but made a good recovery in 71 days. The mass which was removed weighed 31 lbs., and the pus must have weighed at least 30 lbs. in addition.

vi. Hindu, *æt.* 40. Four years' duration. Studded with tubercles exuding lymphic fluid. Operation as usual. Double hydrocele. Discharged in 59 days. Tumour weighed 2 lbs.

vii. Hindu, *æt.* 30. One year's duration. Right hydrocele. Usual operation. Discharged in 52 days. Weighed 1 lb. 13 oz.

viii. Mahomedan, *æt.* 30. One year's duration. Usual operation. Recovered in 84 days. Tumour weighed 4 lbs. 1 oz.

ix. Mahomedan, *æt.* 30. Six years' duration. Periodic fever. Right hydrocele. Usual operation. Discharged in 53 days. Weighed 4 lbs.

x. Hindu, *æt.* 50. One year's duration. Usual operation. Recovered in 36 days. Small tumour weighing 14 oz.

xi. Hindu, *æt.* 40. Two years' duration. Periodic fever. Right hydrocele. Discharged in 41 days. Weighed 3 lbs. 1 oz.

xii. Hindu, *æt.* 35. Large double hydrocele of ten years' duration covered with hypertrophied skin. Scrotal skin removed. Penis not decorticated. Tunicae opened and pared off; contained 64 oz. of fluid. The scrotal skin weighed 12 oz. Operation completed as in cases of scrotal tumour. Recovered in 39 days.

xiii. Hindu, *æt.* 30. Eight years' duration. Periodic fever. Double hydrocele. Usual operation. Left testicle removed on account of accidental division of globus minor in dissecting off a very thick tunica. Recovered in 53 days. Tumour weighed 7 lbs.

xiv. Hindu, *æt.* 35. Four years' duration. Usual operation. Discharged in 47 days. Weighed 16 lbs. 6 oz.

xv. Hindu, *æ*t. 35. Large tumour of seven years' duration in a very fat man who had been addicted to alcohol and now consumed about 180 grains of opium daily. History of periodic fever and double hydrocele. Operation performed in the usual way. Recovered in 66 days. Weighed 24 lbs.

xvi. Hindu, *æ*t. 35. Ten years' duration. History of periodic fever. Usual operation. Discharged in 71 days. Weighed 40 lbs. 10 oz.

xvii. Hindu, *æ*t. 20. Two years' duration. Periodic fever. Usual operation. Recovered in 57 days. Weighed 2 lbs.

* *. The operation performed in these cases was the same in every particular as I have described in previous papers. Pockets were invariably dug for the accommodation of the testes, and the remaining skin of the tumour stitched over them. Careful irrigation with bichloride lotion was carried out in every case, and the deep dressing (boracic gauze sprinkled with iodoform) left on for ten or twelve days, the outer dressing (bichloride gauze) being changed as often as it was soaked. The mortality in this series of cases 1 in 17 or 5·8 per cent. is very moderate. Case v is a very remarkable one. In this and in Case xiii, removal of one testis was found necessary.

(b.) *Elephantiasis of the labia.*—Hindu, *æ*t. 30. The labia majora were removed about two years ago, and during the last 11 months the minora have begun to swell; they are about the size of a hen's egg. They were removed at their base, and patient left hospital in eight days with the wounds almost healed.

(c.) *Elephantiasis of the prepuce*.—East Indian, *æt.* 30. Had phimosis two years' ago for which the prepuce was slit. It has swelled to a great size. The swollen part was removed by dissection, and the wound stitched. It healed by first intention in 12 days.

2. *Fibroma of the pharynx*.—Hindu, *æt.* 35. Began to suffer from difficulty in deglutition and respiration three years ago, and about that time discovered a lump growing deep in the throat. A smooth globular mass can be felt behind the epiglottis. Preliminary tracheotomy was performed, and the pharynx entered from the left side by pharyngotomy. The tumour was turned out through the wound and removed by *ecraseur*. It was globular attached by a broad base to the left aryteno-epiglottidean fold, and was found by the microscope to be a simple fibroma. The tracheotomy tube was removed on the 3rd day. He was doing well till the evening of the 4th day when, after coughing, hæmorrhage occurred from the stump. It was stopped, but recurred after vomiting, and he died next morning of exhaustion.

* * * This very interesting case was reported at length in the *Indian Medical Gazette*, Vol. XXIII, page 377.

3. *Naso-pharyngeal polypus*.—i. Hindu male, *æt.* 20. Has a firm polypoid tumour in the right nasal fossa presenting at the nostril and behind the soft palate and uvula. The nostril was slit, a Bellocq's cannula passed into the mouth carrying a stout silken thread by which the chain of an *ecraseur* was pulled into

the pharynx and passed round the fundus of the tumour. The most of it was removed by this means, and the remainder avulsed by strong (necrosis) forceps. The bleeding was free, but stopped by plugs of lint, the wound was very carefully stitched with horse-hair and healed by first intention. He was discharged in eight days.

ii. Hindu male, *æt.* 23. Similar case, similarly dealt with. Made a good recovery in eight days. The growth in this case was attached to the root of the pharynx and inner wall of the right posterior naris.

4. *Fibroma of the thigh*.—Jewish boy, *æt.* 3. A very large congenital tumour of the upper and back part of the right thigh. An elastic cord was passed round the limb above the growth, which was removed without much loss of blood. The tumour was found to spring from the periosteum of the femur below the trochanter major. The wound which was very large and deep unfortunately suppurated, and healed mostly by granulation in about two months.

5. *Epulis*.—Hindu male, *æt.* 25. A hard tumour about the size of a walnut growing during the past year between the molar and bicuspid teeth of right side which are decayed. The teeth were extracted, and the growth rooted out by chisel and scalpel. He left the hospital two days after operation.

6. *Fatty tumour of breast*.—Native Christian female, *æt.* 14. Simple tumour situated outside of nipple of right breast of eight months' duration. It was removed by incision and enu-

cléation by Surgeon Jameson. Discharged in 25 days. The growth was found to be a lipoma.

7. *Glandular tumour of breast.*—Hindu female, *æt.* 45. Tumour of right breast of ten years' duration. About a month ago the skin over it gave way, and an excavated ulcer formed. Health indifferent. The whole mass was removed. It weighed 2 lbs. 2 oz. Flaps were taken from the neighbourhood to fill up the gap. The case did well for four days. Pneumonia then set in and proved fatal in seven days.

8. *Angioma of scalp.*—Mahomedan male, *æt.* 50. Vascular tumour of scalp about the size of an orange of 20 years' duration. Recently the surface has become excoriated. The growth was removed by excision, the vessels being secured by pressure forceps, as they were divided and then ligatured. The cavity healed slowly by granulation. He was detained in hospital 33 days.

9. *Venous angiomia of left breast and arm.*—Hindu male, *æt.* 2½. Congenital. This was a growth over the left pectoralis major about the size of a hen's egg from which repeated and severe hæmorrhages had taken place. The left arm, forearm and hand were greatly swollen by dilatations of the superficial and deep veins. The tumour of the breast was excised after its base had been carefully tied in sections with strong catgut. The ligatured tissues sloughed and the wound healed slowly by granulation. Thrombosis and suppuration took place in the venous dilatations of the arm, forearm and hand and numerous openings had to be made to evacuate the matter. These eventually closed.

and the angioma was thus cured. A secondary abscess formed in and around the right knee joint, requiring free opening and drainage. While these events were taking place, the boy suffered from a severe and intractable type of fever with head symptoms and dysentery. He eventually made an excellent recovery.

10. *Cystic tumour of scalp*.—Mahomedan male, *æt.* 35. A large sebaceous cyst of scalp, about the size of an orange, treated by transection and avulsion of the cyst wall. Wound healed in 26 days.

11. *Cystic tumour of axilla*.—Hindu male, *æt.* 20. A multilocular cystic tumour bulging out of the right armpit; skin stretched, but not infiltrated or adherent; tumour moved freely in the cavity of the axilla. It was excised; a deep prolongation between the subscapularis and serratus magnus gave trouble. The subscapular artery was divided, and in securing it with pressure forceps the musculo-spiral nerve was accidentally included. The wound healed by first intention, but he had wrist drop and impaired sensation over radial area. These conditions were undergoing improvement when he left hospital 31 days after operation.

12. *Keloid tumour of thigh*.—Mahomedan male, *æt.* 4½. Sustained a burn on the inner side of left knee 20 years ago; a growth was formed on the site of the burn about the size of an orange, which has begun to ulcerate. It was excised by Surgeon Jameson, the wound healing by granulation in 41 days.

13. *Syphilitic condyloma of rectum*.—The growths in these two cases were situated on the

anal verge and were removed by scissors; a stricture of the rectum being in one of them at the same time incised backwards. Both cases did well.

14. *Removal of diseased axillary glands.*—i. East Indian male, *æt.* 17. Several sinuses of neck and axilla leading to diseased glands. The glands of the left armpit, which were caseated and suppurating, were extirpated by finger and director. He remained in hospital seven months and died of phthisis.

ii. Mahomedan male, *æt.* 8. Sinuses of right side of neck and armpit leading to diseased glands. He had fever three months ago, and this was followed by the glandular swellings. The right axilla was cleared of all its glands. Those which had not already undergone disorganization consisted simply of a capsule filled with soft caseous material. He remains in hospital. His general health has improved, but the sinuses have not closed.

15. *Removal of diseased cervical glands.*—East Indian female, *æt.* 35. Admitted with several sinuses on the left side of the neck leading to diseased glands. The sinuses were slit up and the glands removed by finger and director. The resulting wounds were treated for granulation and healed in 31 days.

16. *Removal of diseased inguinal glands.*—East Indian male, *æt.* 42. Sinuses of left groin leading to a mass of diseased glands which were removed *en masse*. The wound healed by granulation in 68 days.

ii. East Indian male, *æt.* 30. Similar case. Recovered in 60 days.

iii. East Indian male, *æ*t. 24. Similar case. Recovered in 46 days.

iv. Hindn male, *æ*t. 30. Similar case of venereal origin. Discharged well in 53 days.

v. East Indian male, *æ*t. 17. Enlarged mass of glands in right inguinal region. History of gonorrhœa. Glands exposed by incision and removed. Discharged in 17 days.

vi. Hindu male, *æ*t. 16. Both groins swollen; glands indurated and enlarged; extirpated. Recovered in 47 days.

vii. Hindu male, *æ*t. 22. Sinuses of right groins and thigh leading to enlarged and indurated glands. The sinuses were enlarged and the glands enucleated. Recovered in 29 days.

viii. East Indian male, *æ*t. 30. Was treated for bubo several months ago which was opened but refused to heal. Glands of the groins enlarged. The sinus was laid open and glands removed. Recovered in 59 days.

* * Cases of this sort are very common in Calcutta. The inguinal glands of the one or both sides get enlarged from injury or irritation, venereal or otherwise. Suppuration occurs sooner or later, a small abscess forms; is opened, but fails to heal. A sinus remains and beneath it is a mass of indurated glands. As long as any portion of these remains, so long does the sinus persist. Sometimes burrowing occurs, and new sinuses form. The remedy is complete extirpation of the glands. If they are open and much disorganised, scraping with a Volkman's sharp spoon is a good plan; but the easiest and most thorough method is enucleation with the finger and director. On dividing the glands

after removal, they will be found studded with points of caseation and suppuration. The older glands will probably have been eaten away by this process, and nothing left but a hard rind of dense cicatricial tissue. Repair of the cavity from which the glands have been removed generally takes place by granulation, and occupies from one to two months. A strumous taint most frequently underlies such cases.

17. *Removal of Hæmorrhoids.*—Mahomedan male, *æt.* 50. Has suffered from piles for five years; they bleed occasionally. Four internal piles were removed by clamp and cautery and some loose folds of anal skin snipped off by scissors. Discharged in 15 days.

VIII.—REMOVAL OF CALCULI.

1. *Prostato-vesical calculus removed by perinæal section.*—Hindu male, *æt.* 22. Has had urinary trouble since childhood. During the last ten days there has been almost complete stoppage. A large stone was found occupying the prostatic urethra. It was easily reached and dislodged by a perinæal section. A small part of the stone projected into the bladder. He recovered in 37 days.

2. *Vesical calculus removed by supra-pubical lithotomy.*—Mahomedan male, *æt.* 45. Has been suffering from symptoms of stone for many years. During the last six months his symptoms have become greatly aggravated. The stone was found to be very large, and was removed by supra-pubic incision. It weighed 5 ounces. The wound was not stitched, and healed slowly. Repair was impeded by deposit of phosphates.

He was discharged cured 69 days after operation.

3. *Vesical calculus removed by litholapaxy.*—Hindu male, *æt.* 75. Underwent the operation of lithotomy 20 years ago. Has had a recurrence of stone symptoms for several years. A stone was found in the bladder and removed by crushing and aspiration, the instruments being introduced thrice. The débris weighed 7 drachms. The operation was followed by no constitutional and very little local disturbance, and he was able to leave hospital in a week.

4. *Vesical calculus removed by median lithotomy.*—Hindu male, *æt.* 44. Has had symptoms of stone for five years. A very stout man with an unusually deep perinæum. An attempt was first made to crush the stone; but the instrument after several trials, failed to find and grasp it. The perinæum was then laid open on a grooved staff. The stone was very friable and broke down on grasping it, so that it became necessary to remove the fragments by scoop and injection of water. The bladder was thoroughly cleared out, and a catheter was retained for a few days. He made a good recovery in 30 days.

* * * This man had the deepest perinæum that I have ever met with. The point of my forefinger (a very long one), could just reach the neck of the bladder through the perinæal wound; the bladder was not sacculated nor was the stone encysted. The failure to grasp the stone was probably due to the instrument not having been pushed far enough in. The operation was in reality one of median lithotripsy.

IX.—INCISIONS.

1. *Abdominal section for obstruction.*—Hindu male, *æt.* 40. Admitted with a globular swelling in left groin, and acute symptoms of obstruction of three days' duration. He had been treated in hospital for similar symptoms ten days previously, but they yielded on application of ice. The symptoms becoming aggravated and collapse threatening, an incision was made over the swelling in the inguinal region by Surgeon Jameson, and the bowel examined. A knuckle of intestine was found which had been badly nipped, and half of the circumference was gangrenous. The gangrenous portion was removed, and the sides of the gut brought together by five catgut sutures. No other lesion was found, and the wound was stitched up. Patient died exhausted 7 hours after the operation.

2. i. *Tracheotomy for syphilitic laryngitis.*—Hindu female, *æt.* 40. Admitted with syphilitic ulceration of palate and larynx and urgent dyspnoea of four days' duration. Tracheotomy was performed by Surgeon Jameson below the cricoid cartilage. Patient improved greatly under treatment, and left the hospital wearing a tube after 107 days' residence.

ii. *Preliminary tracheotomy.*—Hindu clerk *æt.* 35. Tracheotomy was performed in this case as a preliminary to removal of a pharyngeal tumour (See VII B. 2.)

3. *Herniotomy.*—i. Mahomedan male, *æt.* 20. Right oblique inguinal hernia descended five days ago, and has been strangulated since then. Obstruction of bowels complete. Stercoraceous

ous vomiting since yesterday. Hiccup and great prostration. The sac was found on puncture to be full of bloody serum. It was laid open and found to contain a large quantity of extremely congested small intestine, a small portion of which was dark and pulpy. The stricture which was at the neck of the sac was divided and the bowel returned, the soft dark portion being kept close to the internal ring. A counter opening was made in the scrotum for drainage, and a few points of suture applied, the wound being dressed antiseptically. He passed a stool next day, but symptoms of peritonitis set in. The gangrenous portion of the gut gave way, and faecal matter and gas came through the wound. He died of exhaustion three days after the operation.

ii. Eurasian female, *æt.* 38. Suffered from umbilical hernia for years. Two days ago the sac filled, and its contents could not be reduced. Taxis, purgatives, enema, ice, &c., have been tried with no success, and the symptoms of strangulation are very urgent, and patient's condition low. The sac was laid open, and found to contain a large quantity of deeply congested and ecchymosed omentum and about three inches of small intestine also deeply congested. The neck of the sac was notched above and below by a hernia knife, and the contents reduced except a portion of omentum which was very deeply ecchymosed and congested, and was cut off after ligature. The neck of the sac was isolated, and ligatured and the edges of the ring brought together by catgut stitches. She passed two stools containing blood after the operation, and

brought up a large quantity of dark grumous matter. Her general condition underwent no improvement, and she died in state of collapse 12 hours after the operation.

iii. Hindu male, *æt.* 70. Has had left oblique inguinal hernia for years. The rupture descended ten days ago, and he has had complete obstruction since then. He is now suffering from hiccup, vomiting, and great prostration. The sac was laid open and found to contain a large quantity of congested small intestine. A twist caused by adhesion was found at one place and undone. The whole mass was then returned with some difficulty. Stercoraceous vomiting occurred during the operation. A portion of large intestine was found in the scrotum behind the sac and outside of it. This was also relieved. Patient was very low after the operation, but rallied somewhat under treatment. He passed eight copious stools. Vomiting, hiccup, and tympanitis recurred next day, and he died exhausted 30 hours after the operation.

iv. Mahomedan male, *æt.* 50. Left oblique inguinal hernia descended three hours ago and symptoms of strangulation, vomiting, hiccup, prostration, &c., appeared soon after. Ice and taxis having been tried without effect, the sac was laid open by Surgeon Jameson, the stricture divided, and the contents reduced. The operation was completed as for radical cure. He made a good recovery, and was discharged in 25 days.

v. Hindu male, *æt.* 45. Oblique inguinal hernia of three years' duration, irreducible for

three days. Pronounced symptoms of strangulation and obstruction. The sac was exposed and opened, the contents returned, and the operation completed as for radical cure. He made a good recovery in 28 days.

vi. Hindu male, *æ*t. 40. Subject for many years to right oblique inguinal hernia. The rupture came down three days ago and could not be returned. Obstruction complete. Signs of strangulation well marked. Ice and taxis tried in vain. The sac was laid open. The stricture divided and contents (congested omentum) returned. The sac was then isolated, tied at the neck and removed, and the pillars, &c., brought together. He had a copious stool next day, and the tympanitis, vomiting, &c., gradually subsided. Made a good recovery in 27 days.

vii. Mahomedan male, *æ*t. 30. Subject to right oblique inguinal hernia for some years. Has had obstruction of the bowels for 14 days, and the symptoms local and general of strangulation are now very pronounced. Sac laid open, a gush of fæculent material issued. Bowel gangrenous.

The gangrenous parts were cut away; the stricture divided, and the ends of the gut stitched to each other and to the lips of the wound for artificial anus. Fæces and flatus escaped freely. He died of collapse in four hours after the operation.

4. *Operation for the radical cure of Hernia.*—

i. Hindu male, *æ*t. 30. Subject to right oblique inguinal hernia for two months. Admitted for two hours' irreducibility. It was returned by taxis after application of ice. In a few days an operation was performed for the cure of the rupture.

The sac was isolated, tied at the neck by transfixion with catgut and amputated. The pillars were brought together, and a counter-opening made in the scrotum for drainage. He got suppurative cellulitis of scrotum with high fever. An abscess formed which had to be opened and a slough separated from the fundus of the scrotum. He made a good recovery eventually in 53 days.

ii. African sailor, *æt.* 39. Right reducible oblique inguinal hernia of five years' standing. A truss does not prevent descent. The usual operation for radical cure was performed. The rupture was found to be of the infantile variety and to possess a second sac. He also suffered from high fever and cellulitis of scrotum resulting in sloughing. He eventually made a good recovery in 63 days.

iii. Hindu male, *æt.* 50. Right reducible oblique inguinal hernia of 16 years' standing. Ring very wide. Truss of no use. The usual operation was performed by Surgeon Jameson. Strong and persistent fever followed, accompanied by suppuration and sloughing. He was reduced to a very low state, but rallied and left the hospital in 62 days with the wound soundly healed and in good health.

iv. Hindu male, *æt.* 30. Right oblique inguinal hernia of several years' standing. Irreducible for four hours on admission. Ice was applied and the taxis successfully employed. A few days afterwards the usual operation for radical cure was performed by Dr. Jameson. He made a good recovery in 59 days, the wound uniting by first intention. A small collec-

tion of matter formed in the scrotum which had to be opened.

v. Mahomedan male, *æt.* 30. Right reducible oblique inguinal hernia of eight years' duration. Ring very wide. Usual operation performed by Dr. Jameson. Hernia of infantile variety with two sacs. Wound healed aseptically in 33 days.

vi. European male, *æt.* 35. Small oblique inguinal hernia of right side of two years' duration not commanded by a truss. Usual operation performed. Sac very small and thick, lying behind a mass of fat. The wound inflamed, suppurated and gaped, and healed by granulation in 54 days.

vii. Hindu male, *æt.* 20. Right reducible oblique inguinal hernia of three years' duration. Usual operation. Made a good recovery in 31 days.

viii. Hindu male, *æt.* 45. Right reducible oblique inguinal hernia of seven years' duration. Usual operation performed. Made a good recovery in 40 days.

* * Although no death took place from this operation during the year, it must be confessed that the first three cases gave cause for much anxiety. The symptoms, sloughing cellulitis and fever, were no doubt due to contamination of the wounds. It is exceedingly difficult to prevent this in some cases on account of restlessness and carelessness; but when an aseptic state of the incision is maintained, repair takes place rapidly and kindly.

The operation has not been described in minute detail, but it differed in no respect from

that which has been detailed in previous papers. I now invariably made a counter opening in the scrotum for drainage, and believe this to be a useful and important step in the operation.

5. *a. Perinæal section with a guide.*—i. Hindu male, *æt.* 30. Was operated on for stone by the supra-pubic method in November 1887, and discharged in 45 days with the wound closed. Re-admitted on 25th February 1888. Four days ago the supra-pubic wound burst open, and nearly the whole of the urine comes through it. A stone was found in the neck of the bladder which was dislodged by the catheter. The perinæum was laid open on the 29th February on a grooved staff and a small calculus, weighing a few grains, removed from the bladder. The supra-pubic fistula was also enlarged, and its walls, which were encrusted with phosphatic débris, thoroughly scraped with a sharp spoon. The supra-pubic wound closed on the 12th of March, but broke open again under an attack of fever. This subsided and both supra-pubic and perinæal wounds healed in a fortnight. A full-sized catheter was passed into the bladder every third day from the 8th March. He was discharged quite cured on 20th April, 56 days after the operation.

ii. Mahomedan male, *æt.* 35. Stricture of urethra following gleet with frequent micturition and inflamed contracted bladder. Dilatation of the urethra failing to relieve the great pain and irritability, the perinæum was opened on a guide, and urine passed through the wound freely. Fever, diarrhœa, irritability of the stomach and emaciation progressed in

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spite of treatment, and he died of exhaustion 66 days after the operation.

iii. Hindu male, *æt.* 48. Case of urinary fistulæ following stricture with hernia of right side and hydrocele of left. Perinæal section was performed on a guide, and the stricture divided at the same time. A full sized instrument was passed every third day. Recovery was tedious but satisfactory after 93 days' residence in hospital.

iv. Hindu male, *æt.* 35. Sustained rupture of the urethra by the pelvis being crushed between two bales. Perinæum boggy. Urethra bleeding; badly lacerated. A grooved staff was passed into the bladder, and the perinæum laid freely open. The perinæal wound gradually closed, and the urethra was kept fully dilated by occasional passage of instruments. Discharged in 37 days.

v. Hindu male, *æt.* 40. Extravasation of urine consequent on stricture and retention. A grooved staff was passed into the bladder, and the perinæum thoroughly laid open. Free incisions were also made into boggy tissues. Some sloughing of the scrotum took place, but he made a good recovery in 55 days.

vi. Hindu male, *æt.* 50. Malignant tumour of the prostate, causing retention and great suffering. Profuse bleeding occurred on attempting to pass an instrument into the bladder. The perinæum was incised, and the tumour carefully examined through the wound. It was found to implicate the neck and fundus of the bladder and the anterior wall of the rectum. A straight channel was made into the bladder,

a Syme's cathether inserted, and the wound dressed antiseptically. He experienced relief from the urinary distress, but died of exhaustion nine days after the operation.

b. *Perinæal section without a guide (Cock's).*—

i. Hindu male, *æt.* 40. Extravasation consequent on stricture and retention. Bladder had been emptied by supra-pubic puncture. Urine coming in drops. Penis and scrotum greatly swollen and boggy. Patient very low. Cock's operation was performed, and the bladder easily reached. A gum-elastic catheter was retained in the wound. Free incisions were made in the boggy tissues. The patient rallied somewhat; but diarrhœa set in from which he slowly recovered. The tissues into which extravasation had taken place sloughed, and when the sloughs separated, a calculus weighing 40 grains was found in a cavity on the under surface of the penis. Suppuration also took place in the right tunica, which had to be opened. The urethra was dilated, and a full sized instrument passed every third day. After 85 days' treatment, he left the hospital almost well; the perinæal wound having been reduced to a very narrow sinus.

* * The mischief in this case was undoubtedly caused by the calculus. The state of the parts was such that no attempt could be made to pass an instrument per urethram and Cock's operation undoubtedly saved the man's life.

ii. Hindu male, *æt.* 70. Admitted with double inguinal hernia, hydrocele and stricture of urethra caused by caustic injections and enlarged prostate. A false passage had been caused by an attempt to pass an instrument

into the bladder. While waiting until the false passage should heal, retention occurred which was relieved by aspiration. On its recurrence the perinæum was laid open by Cock's method and a Syme's catheter passed; the stricture was also divided.

A full-sized instrument was passed occasionally; the perinæal wound gradually closed, and he was discharged quite cured in 27 days after the operation.

iii. Mahomedan male, *æt.* 30. Sustained a rupture of his urethra $2\frac{1}{2}$ months ago by a fall from a tree. He had retention which was relieved by opening the perinæum through which a gum-elastic catheter was passed into the bladder. He has worn this instrument ever since. It was found impossible to introduce an instrument into the bladder through the urethra. A director was passed through the perinæal fistula, and a free incision made backwards and forwards. A sound was passed into the urethra and the cicatrized proximal end of the rupture freely incised. The distal end was found after some search, and the finger carried into the bladder. The continuity and patency of the urethra were maintained by frequent passage of a full-sized instrument. The perinæal wound gradually closed, and he left hospital cured after 57 days.

iv. Hindu male, *æt.* 50. Admitted with retention of urine of four days' standing. The bladder had been tapped, and an instrument passed into the urethra. Bleeding took place after this, and the bladder got distended with foetid sanious fluid. Cock's operation was per-

formed without difficulty, and the bladder washed out with boracic lotion.

Fever of low type supervened with albuminous urine and œdema of neck, chest and belly.

He died exhausted in five days.

vi. Hindu male, *æt.* 35. Sustained rupture of urethra by fall on a brick in a sitting posture. Perinæum boggy. Free incision made without a guide. Urethra torn across. Left hospital in 22 days, able to micturate through the natural passage in full stream. A full-sized instrument had been passed every third day after operation.

6. *Incision for hæmatocele.*—Jewish youth *æt.* 25. Hæmatocele of right tunica laid open freely under antiseptic precautions. A hydrocele of the left side was laid open at the same time. He was attacked with tetanus eight days after the operation and died of it in three days.

7. *Incision for stricture of the Rectum.*—Madrassee ayah, *æt.* 42. Admitted with fistula in ano and stricture. Both were divided by the same incision. The resulting wound healed very slowly. Patient had suffered from tertiary syphilis.

8. *Incision for Atresia oris.*—i. Hindu male *æt.* 25. Mouth completely closed by a strong cicatricial band on left side due to the healing of an ulcer which occurred during fever. The band was divided and mouth opened by a gag. This was used occasionally afterwards, and he left hospital in 30 days with the wound healed and able to open his mouth widely.

ii. Hindu male, *æt.* 40. Very firm closure due to cicatrization of mercurial ulcers. The in-

incisor teeth were extracted, the bands divided and the mouth forced open by the screwgag. He left hospital in 18 days, greatly improved and able to eat soft ricé.

iii. Hindu male, *æt.* 26. Closure due to cicatrized ulcer of right side which was divided by probe-pointed bistoury. The opening of the mouth was completed and continued by the screwgag, and he left hospital quite cured in 24 days.

* * * The after history of these cases could not be traced. Cases i and iii in which the cicatricial band was narrow would probably remain well. In case ii contraction of the buccal scar would probably recur, but the pulling of the incisor teeth would enable him to take fluid and pulpy food.

9. *Large abscesses*—*a. Scapular*.—Hindu male, *æt.* 40. Diffuse abscess around left shoulder-joint, bulging over the infra spinous fossa. An opening was made at this site and in four days another in front of the joint, both under anti-septic precautions. The discharge was profuse and offensive. Patient became low and delirious, and died 19 days after the first operation.

b. Sub-scapular.—Chinese male, *æt.* 24. Admitted with a collection of matter under the left scapula, which was evacuated by an opening behind the inferior angle of the bone. Recovered in nine days.

c. Lumbar.—i. Hindu male, *æt.* 21. Large collection in right loin. Free opening made, and about a pint of matter let out. Caries of lumbar spine discovered. He was kept under treatment for four months, and left with a small sinus at the seat of incision.

ii. Hindu female, *æ*t. 30. Abscess of right loin following gluteal abscess of same side. Opened antiseptically. Discharged in five days.

d. Psoas.—Hindu male, *æ*t. 25. Had an abscess over the sacrum five months ago, which remained over four months. There is a large collection in the basin of the pelvis pointing at the left groin. General health very bad. About 32 ounces of pus was evacuated. The cavity contracted slowly, and he was discharged in 80 days in much better health with a small sinus.

e. Iliac.—i. East Indian boy, *æ*t. 5. Left side caused by a fall. Opened below Poupart's ligament. Recovered in 19 days.

ii. Mahomedan male, *æ*t. 8. Opened below Poupart's ligament. Recovered in 30 days.

f. Gluteal.—i. East indian female, *æ*t. 13. Very large deep collection in right gluteal region. Opened antiseptically. Recovered in 12 days.

ii. Mahomedan male, *æ*t. 35. Admitted with great thickening and induration of left buttock and groin, which were tunnelled with sinuses and studded with small abscesses. History of syphilis. The sinuses were systematically laid open and scraped, and dressed antiseptically. Constitutional treatment was resorted to, and he left hospital with a few superficial granulating sores in 17 days.

g. Thigh.—i. East Indian male, *æ*t. 7. Large deep collection in right thigh under extensor mass. It was laid opened and drained and healed satisfactorily. Discharge from hospital delayed by the formation of another abscess in the neighbourhood.

ii. Hindu female, *æt.* 20. Periosteal abscess of left thigh. Opened and drained antiseptically; healed in 35 days.

iii. Hindu male, *æt.* 30. Large collection at upper and back part of left thigh; 48 oz. evacuated. Another abscess formed in left loin, which detained him in hospital for 55 days.

h. Popliteal.—Hindu male, *æt.* 25. Very large abscess extending up and down to lower third of thigh and middle of leg. Free opening made at each end of the cavity and tubes inserted. Discharged cured in 49 days.

* * In most of these cases the subjects were in miserable health, and the constitutional treatment was quite as important a matter as the local, if not more so.

X.—REPARATIVE OPERATIONS.

1. *Rhinoplastic operation.*—Mahomedan female, *æt.* 30. The tip *alæ* and columna of the nose were cut off by her husband and a wound inflicted on the upper lip dividing it completely. A new nose was brought down from the forehead by Surgeon G. Jameson and carefully stitched to the stump. It adhered by first intention and the pedicle was divided 14 days after the operation. She was discharged in 29 days with a fairly good substitute for the lost feature.

2. *Plastic operation of the face.*—This operation was rendered necessary by a gap at the root of the nose remaining after removal of a cancerous upper jaw (see VII, i (c) i). A flap was taken from the cheek to fill it up, and the object was satisfactorily accomplished.

XI.—OPERATIONS NOT CLASSED.

1. *Castration*.—Hindu male, *æt.* 30. Admitted with œdematous scrotum and an enlarged nodulated right testicle in which several cysts containing clear fluid existed. Patient suffered great pain. The testis was removed in the usual way by Surgeon Jameson, and the fundus of the scrotum which was thickened and adherent. Made a good recovery in 33 days.

GENERAL REMARKS.

1. *Death-rate*.—The death-rate—9·8 per cent. of cases is a true one, because no patient was removed in a doubtful or desperate condition, and the cases with some trivial exceptions were treated to the end. The rate was somewhat higher than the previous years (6·6), but may be considered favourable for the locality and class of patients and cases.

2. *Death causes*.—Nearly half of the deaths (7 out of 16) were among bad cases of strangulated hernia that had applied too late for relief, and urinary cases in which perinæal section was resorted to as a last chance. The fact that only one death after operation was due to tetanus (in a second case, the disease existed before operation) is a remarkable one, and goes to confirm the impression that post operation tetanus has been rare since bichloride of mercury came to be systematically used as an antiseptic.

3. *Antiseptics and hospitalism*.—No death was due to pyæmia or septicæmia or any other form of septic disease arising as a result or complication of operation wound, and the absence of septic disease in the wards through-

out the year has been undoubted. In urinary and similar cases septic conditions existed on admission, and no doubt complicated the operation and compromised the health and life of the patient, but in the great majority of operations the wound remained "sweet" and all indications of systemic poisoning were absent. In the few cases in which the opposite conditions obtained (*e.g.*, the three hernia operations specially referred to) the contrast was very striking.

The spray was not used in any case during the year.

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PRÉCIS OF OPERATIONS

PERFORMED IN THE

WARDS OF THE FIRST SURGEON, MEDICAL COLLEGE
HOSPITAL,

During the year 1889.

BY BRIGADE-SURGEON K. MCLEOD, A.M., M.D., F.R.C.S.E.,
Professor of Surgery, Calcutta Medical College.

THE wards of the First Surgeon were under my charge for six months of the year 1889. Surgeon-Major D. O'C. Raye, M.D., held charge of them during my absence on leave from May to October inclusive, and those operations which were performed by him or by other members of the hospital staff are indicated by the operator's name. This is the ninth of this series of records, and has been drawn up on precisely the same lines as its predecessors. I hope to add a tenth and perhaps an eleventh year to the series, which will then furnish a true and detailed picture of surgical work during a period rendered remarkable by the introduction and gradual improvement of antiseptic methods; in which a decided change for the better has undoubtedly taken place, as respects the success of operative measures and the prevalence of those complications and sequelæ conveniently characterised by the term hospitalism. The notes of cases from which these abstracts have been prepared have been compiled from the original bed-head

tickets by Assistant-Surgeons Aukshai Kristo Shaha, L.M.S., and Syama Nirod Sen Gupta, M.B., to whom my acknowledgments are due for the cheerful and efficient assistance rendered by them in the treatment of cases and maintenance of records.

Table of Operations performed during 1889.

I.—OPERATIONS ON ARTERIES.				No.	Died.
1	Ligature of common carotid for angioma of scalp	...	...	1	0
2	Ligature of temporal artery for the same	...	...	1	0
3	Laying open a traumatic aneurism and tying the artery above and below	...	...	1	0
Total				3	0

II.—OPERATIONS ON VEINS.				No.	Died.
1	Ligature of varicose veins by buried catgut loops	...	...	2	0
2	Ligature of varicocele by buried catgut loops	...	...	4	0
3	Ligature and excision of varicocele after exposure by antiseptic incision	...	...	2	0
Total				8	0

III.—OPERATIONS ON JOINTS.				No.	Died.
1	Reduction of old dislocation of shoulder-joint	...	...	1	0
2	Forcible movement of stiff joints—				
	<i>a</i> elbow	...	...	1	0
	<i>b</i> knee	...	...	1	0
3	Aspiration of knee-joint	...	...	1	0
4	Incision of knee-joint	...	...	1	0
5	Erasion of calcaneo-cuboid joint	...	...	1	1
6	Excision of elbow joint—				
	<i>a</i> for compound fracture	...	...	1	0
	<i>b</i> for old dislocation	...	...	2	0
Total				9	1

IV.—OPERATIONS ON BONES.

	No.	Died.
1 Sequestrotomy for necrosis ...	16	0
2 Erasion for caries ...	1	0
3 Excision and fracture for bending ...	1	0
4 Excision for compound fracture ...	1	0
5 Wiring fractured patella ...	1	0
Total ...	20	0

V.—AMPUTATIONS.

A. *For Injury.*

1 Primary of forearm ...	4	0
2 Primary of wrist ...	1	0
3 Primary of fingers ...	3	0
4 Primary of leg ...	2	0
5 Primary of toes ...	2	0
6 Secondary of arm for gangrene ...	1	0
7 Secondary of leg for gangrene ...	1	0
8 Secondary of toe for gangrene ...	1	0
Total ...	15	0

B. *For Disease.*

9 Of the arm for sloughing ulcers ...	1	0
10 Of the arm for myeloid sarcoma ...	1	0
11 Of the finger for whitlow ...	1	0
12 Of the thigh for disorganized knee-joint ...	1	0
13 Of the leg for mycetoma ...	2	1
14 ————— Epithelioma of foot ...	1	0
15 Syme's for caries of ankle ...	1	0
16 Chopart's for sarcoma ...	1	0
17 Of great toe for necrosis ...	1	0
Total ...	10	1

GRAND TOTAL OF AMPUTATIONS ... 25 1

VI.—REMOVAL OF TUMOURS (BY EXCISION).

A. <i>Malignant.</i>				No.	Died.
1 Epithelioma	<i>a</i> of heel	...	...	1	0
	<i>b</i> of penis	...	...	4	0
2 Scirrhus	<i>a</i> of breast	...	...	2	1
	<i>b</i> of axilla	...	...	1	0
3 Sarcoma	<i>a</i> of breast	...	...	1	0
	<i>b</i> of forearm	...	...	1	0
	<i>c</i> of lumbar region	...	...	1	1
4 Fibro-sarcoma	of jaws	...	...	3	0
5 Chondro-sarcoma	of hand	...	...	1	0
6 Lympho-sarcoma	of axilla	...	...	1	0
Total				16	2

B. *Non-Malignant.*

1 Elephantiasis	<i>a</i> of prepuce	...	...	4	0
	<i>b</i> of scrotum	...	...	24	1
	<i>c</i> of labia	...	...	5	0
2 Lipoma	<i>a</i> of forehead	...	...	1	0
	<i>b</i> of neck	...	...	1	0
3 Myxoma	<i>a</i> of palate	...	...	1	0
	<i>b</i> of nose	...	...	1	0
4 Angioma	of lip	...	...	2	0
5 Cyst	<i>a</i> sebaceous of scalp	...	...	1	0
	<i>b</i> of thigh	...	...	1	0
	<i>c</i> bursal of elbow	...	...	2	0
6 Condyloma	of anus	...	...	1	0
7 Hæmorrhoids		...	...	6	0
8 Diseased glands	<i>a</i> cervical	...	...	3	0
	<i>b</i> axillary	...	...	1	0
	<i>c</i> inguinal	...	...	16	0
Total				70	1

GRAND TOTAL OF TUMOURS ... 86 3

VII.—REMOVAL OF FOREIGN BODIES.

1 Date thorn	from foot	1	0
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VIII.—REMOVAL OF CALCULI.

			No.	Died.
1 Vesical by litholapaxy	7	1

IX.—INCISIONS.

1 Tracheotomy for laryngitis	1	1
2 For incarcerated inguinal hernia (without opening sac)	...	...	1	0
3 For strangulated inguinal hernia (with opening sac)...	...	...	6	2
4 For strangulated femoral hernia	...	...	1	0
5 Radical cure of hernia	...	...	2	1
6 Laparotomy <i>a</i> for obstruction	...	...	1	1
<i>b</i> for wound of stomach	...	...	1	0
7 Lumbar colotomy	...	...	1	1
8 Tenotomy <i>a</i> for talipes equinus	...	...	1	0
<i>b</i> for talipes equino-varus	...	...	1	0
<i>c</i> for flexion of hip	...	...	1	0
9 For suppuration in mastoid cells	...	...	1	0
10 For suppurated hæmatocele	...	...	3	0
11 For suppurated hydrocele	...	...	3	0
12 For stricture of rectum	...	...	1	0
13 For atresia oris	...	...	1	0
14 Internal urethrotomy	...	...	1	0
16 External urethrotomy—				
<i>a</i> Syme's	...	...	2	1
<i>b</i> Cock's	...	...	6	2
<i>c</i> Whitehead's	...	...	1	0
17 For sinuses	...	...	8	0
18 For abscesses	..	...	13	0
Total	...	...	57	9

X.—REPARATIVE OPERATIONS.

1 For cicatrix after burn	...	...	1	0
2 For extroverted bladder	...	...	2	0
3 For vesico-vaginal fistula	...	...	1	0
4 For hernia testis	...	...	1	0
5 For protrusion of omentum	...	...	1	0
6 For ulcer of sole of foot	...	...	1	0
Total	...	...	7	0

X.—OPERATIONS NOT CLASSED.

		No.	Died.
1	Rapid dilatation of urethral stricture	...	4 0
2	Aspiration of bladder	...	1 0
3	Reduction of prolapsus of the rectum	...	1 0
Total		...	6 0
GRAND TOTAL		...	239 14

Death-rate per cent., 5·85.

OPERATIONS ON ARTERIES.

I.—1. *Ligature of the common carotid artery for angioma of the scalp.*—Hindu female, aged 40. Admitted with two pulsating tumours of the scalp whose growth is said to have been caused by a fall on the head sustained one year and a half ago. One of the tumours occupies the left temporal region, being situated below the fascia. The zygoma has been raised and expanded. The other, which is separated from it by an interval of sound scalp, is situated on the forehead and crown of the head rather to the right side. These tumours are tense and pulsate visibly. They collapse somewhat on compression, and in expanding the pulsation is distensile. Large active arteries are felt coursing towards them and their surface is traversed by large veins. Patient has a congenital goitre and proptosis of left eyeball. There are no "brain symptoms," though the patient is very nervous and the circulation excitable. The left common carotid was tied a few days after her admission. The wound healed in nine days. Pulsation ceased in the temporal tumour, which also underwent collapse. The frontal

tumour also became softer, but active pulsation persisting in some large vessels entering it from below—

2. *Ligature of the right temporal artery* was resorted to two days after the carotid had been tied. This was done under chloroform by buried catgut loops at two places above and below the zygoma; a curved needle threaded with catgut was passed under the artery and then in a reversed direction over the artery, entering and emerging through the same punctures. The loop was then tied tightly and the knot buried. Some suppuration took place round the lower loop, but no bleeding. These measures caused still further collapse and abolished pulsation. Patient grew impatient after 46 days' residence in hospital and insisted on going home. Her condition was no doubt greatly improved, but whether the growth of the tumours was permanently checked it is impossible to ascertain.

3. *Traumatic aneurism.*—Hindu female, *æt.* 50. The aneurism in this case occupied the cavity of a Colles's fracture sustained four months ago. The cavity was laid open after the application of an elastic cord, the clots cleared out, a piece of loose bone removed and bleeding points secured. The wound healed by granulation in 36 days, and the patient was discharged well 75 days after the operation.

OPERATIONS ON VEINS.

I.—1. *Ligature of varicose veins by buried catgut loops.*—Hindu male, *æt.* 20. This man was admitted in the previous year with venous

angioma of the veins of the forearm and arm. Soft swellings, consisting of dilated veins, existed above and below the elbow-joint on the radial side and above the wrist on the same side. A phlebolith had been removed from his basilic vein on the 20th of December and the vein tied with catgut above and below. The wound healed in nine days. On the 6th of January two catgut loops were placed on the swelling below the elbow at a distance of about 3 inches. The catgut was passed under the veins by means of a curved needle and then backwards over the veins, entering and emerging through the same punctures. The loops were then tied firmly, the ends cut short and buried under the skin. Some suppuration took place in the punctures and much induration around the loops. The veins got collapsed and swelling gradually shrank. On the 25th of January the veins above the elbow and wrist were similarly dealt with, four loops being inserted. No suppuration took place on this occasion, but induration, collapse of the veins, and shrinking of the swelling ensued. He was discharged after 63 days' residence in hospital with a useful arm of normal shape and dimensions.

2. *Ligature of varicocele by buried loops.*—This procedure was adopted in four cases. Three of the patients were young Eurasian lads and the fourth a European, aged 25. In one case both sides were operated on simultaneously; in the other three one side only was dealt with. The parts having been washed, purified with soap and water and scrubbed with carbolic lotion, the scrotum was grasped in the middle line by the

finger and thumb of the left hand, the vas deferens was allowed to escape inwards and a needle passed from before backwards between it and the varicose mass. A thread of stout catgut was carried through. The veins were now allowed to escape inwards and the needle entered through the posterior puncture and made to emerge at the anterior. The veins were then encircled in a loop, which was tied tight and buried. Two such loops were placed—one just above the testicle and the other below the external ring; the punctures were closed with collodion. No suppuration took place, but some induration appeared around the loops and some œdema of the scrotum was observed. No serious constitutional disturbance ensued. The patients remained 13, 18, 26, and 43 days in hospital, and the varicose mass underwent diminution in bulk, but some swelling remained. The condition was greatly improved in all cases; but in none did complete shrinking and obliteration of the mass occur. Two of these operations were performed by Dr. Raye.

3. *Ligature and excision of varicocele after exposure by antiseptic incision.*—The subjects of this more radical procedure were a Eurasian male, *æt.* 19, operated on by Dr. Raye, and a European, *æt.* 26, by Dr. Jameson. One side was involved in either case. The varicocele was reached by a lateral incision, the mass separated from the vas and the artery and tied in two places; the intermediate portion was removed and the wound stitched and dressed antiseptically. The first case healed by first intention in eight days and the last by granulation in twenty-

eight days. The result in both cases was satisfactory.

* * The impression left by these six cases was that while treatment by buried loops is easy and safe, it is not so effectual as ligature and excision, which is somewhat more tedious and severe; but does not constitute by any means a formidable process.

OPERATIONS ON JOINTS.

1. *Reduction of old dislocation of shoulder-joint.*—Downward dislocation of one month's standing in a Hindu male, *æt.* 25. Reduction effected by heel in axilla after traction by pulleys and manipulation had failed.

2. (a) *Forcible movement of stiff elbow.*—Hindu male, *æt.* 30. Fibrous ankylosis in a straight position following arthritis nine months ago. Under chloroform the movements of the joint were fully restored. Some grating was felt and the joint became painful and swollen for a few days during which it was kept in a semiflexed position. Passive motion was repeated, and the patient who took his discharge in thirteen days advised to continue it.

(b) *Forcible movement of stiff knee.*—Native Christian female, *æt.* 20. Joint injured by a fall four months ago. Cannot stretch it beyond 120° ; can be flexed to the full extent. The joint was fully straightened under chloroform and put on a MacIntyre splint. When the irritation subsided, passive movement was repeated again and again, but on one such occasion the ligamentum patellæ gave way and severe inflammation followed. It is now being treated for ankylosis in a straight position.

3. *Aspiration of knee joint.*—Hindu male, *æt.* 50. Sub-acute synovitis of one month's duration. History of syphilis. The joint was much distended and the effusion persisting in spite of treatment, 6 ounces of fluid were removed by aspiration. The fluid did not re-accumulate, and understrapping and iodide of potassium considerable improvement in the state of the joint took place. (Dr. Raye.)


2. *Incision of knee-joint.*—European male, *æt.* 10. Sustained an injury of left knee joint a week ago. Joint much inflamed and distended with fluid. A fluctuating swelling formed outside the head of the tibia which burst and emitted pus. This was found to communicate with the joint cavity which was freely laid open by incision. Satisfactory recovery took place in 49 days, (Dr. Raye.)

5. *Erasure of calcaneo-cuboid joint.*—East Indian male, *æt.* 21. Admitted with painful swelling of the dorsum of right foot. History of syphilis. Softening and fluctuation took place over the calcaneo-cuboid joint. An incision was made under chloroform and a little pus voided. The margins of the joint were felt bare. The articular cartilages, which were eroded, were removed by a sharp spoon and the underlying surfaces well scraped and filed. The wound was left to granulate. Pain disappeared after operation and the case is doing well.

6. (a) *Excision of elbow joint for compound fracture.*—Hindu male, *æt.* 13. Fell from a height 34 days ago and broke his left humerus near the joint. The joint is now stiff and the internal condyle protrudes through an ulcer on

the inner side of the joint. The joint was exposed by a straight incision on its posterior aspect and the ends of the bones removed. He left hospital in 48 days with a useful limb. (Dr. Raye.)

(b.) *For old dislocation.*—i. Mahomedan male, *æt.* 36. Dislocated his right elbow by a fall five months ago. It is quite stiff now in a straight position. The joint was resected. Healing was delayed by oozing and formation of clot in the wound cavity, but a satisfactory result was ultimately obtained. (Dr. Adie.)

ii. Hindu male, *æt.* 20. Fell off horseback two months ago and broke the lower end of the humerus. The bones of the forearm have been displaced backwards and there is anchylosis in a straight position. An attempt was made to flex forcibly under chloroform without effect. The joint was exposed by a  shaped incision from behind; the lower end of the humerus removed, the end of the bone being rounded to fit into the sigmoid cavity of the ulna, which was left. The wound healed by first intention. Passive movement was resorted to, and the patient was discharged in 47 days with a useful arm. The extremes of flexion and extension could not be reached, but sufficient movement existed for practical purposes.

OPERATIONS ON BONES.

1. *Sequestrotomy for necrosis.*—It would serve no useful purpose to give the details of these sixteen cases. They illustrate most of the varieties of necrosis and cario-necrosis met with in this country, resulting from injury and inflamma-

tion, acute and chronic, common and specific. A few of them exemplify the struma of early life, and one or two the struma of age. The treatment consisted in exposing freely carious surfaces and necrotic cavities, removing sequestra, scraping away bare and rough surfaces by gouge and osteotribe, removing unhealthy granulations by sharp spoon, and in all cases endeavouring to render the wound cavities aseptic and obtain repair by aseptic granulation. Splints and constitutional treatment were not neglected. According to the circumstances of the case, repair was rapid or slow; the period of retention in hospital varied from a week to seven and-a-half months. In some cases repeated operations were required. As unusual sequestra may be mentioned a mass of mastoid cells in one case and the tip of a cervical transverse process in another removed by Dr. Raye. In no case did any unfavourable conditions follow the operation.

2. *Erasion for caries.*—The acromion process was the part affected in this case, and the result of scraping was satisfactory, the cavity healing by granulation in twenty days.

3. *Excision and fracture for bent tibia.*—This patient, a Hindu male, *æ*t. 30, was admitted on the 17th of May for caries of the left tibia; the bone was trephined by Dr. Raye on the 8th of June and several fragments of carious bone removed. The cavity healed up with considerable inward curvature of the leg, causing inversion of the foot and rendering walking painful and difficult. On the 9th of November a V shaped piece of bone was remov-

ed by chisel from the convexity of the tibia (outer aspect) and in forcibly straightening the limb the fibula gave way. The wound healed aseptically. Firm union of both bones in a straight position occurred and he left hospital on the 8th of March 1890 with a useful limb.

4. *Excision for compound fracture.*— $\frac{3}{4}$ of an inch was removed by the saw from the protruding end of the radius. The case did well.

5. *Wiring fractured patella.*—Mahomedan male, *æ*t. 35. Sustained transverse fracture of right patella and double Colles's fracture through a fall on board ship four months before admission. The fractures of the radius had united with considerable deformity. The fragments of the patella were about two inches apart and the function of walking was much impaired. The fragments were brought together by a longitudinal incision pared by chisel, drilled and brought together by two wires. A satisfactory result was obtained. He was detained in hospital for three months.

AMPUTATIONS FOR INJURY.

V. 1. *Primary amputation of the forearm.*—

i. Hindu male, *æ*t. 35. Right hand and forearm smashed in an oilmill. Amputation by oval flaps at middle of forearm same day. Flaps healed by first intention. Track of tube suppurated and healed by granulation. Remained five weeks in hospital. (Dr. Raye.)

ii. Hindu male, *æ*t. 18. Right hand and wrist smashed in an oil-machine. Amputation by oval flaps at lower third. Discharged in 67 days.

iii. Mahomedan male, *æ*t. 16. Gun accident causing destruction of hand and wrist. Amputation at lower third by oval flaps. Healed in 29 days. (Dr. Raye.)

iv. Hindu female, *æ*t. 30. Machine accident, hand and wrist crushed. Amputation of lower third by oval flaps. Healed in 29 days. (Dr. Raye.)

2. *Primary amputation of wrist.*—Hindu male, *æ*t. 13. Machine accident. Disarticulation at wrist. Healed aseptically. Recovered in 19 days.

3. *Amputation of fingers.*—

i. Hindu male, *æ*t. 27. Right index finger smashed and hand badly lacerated by machine. Finger removed, and wound stitched. Healed aseptically in 10 days.

ii. Hindu male, *æ*t. 45. Similar case; healed in 21 days.

iii. Hindu male, *æ*t. 25. Right index finger smashed in a mill. Lacerated wound of thumb. Finger removed, and wound stitched. Recovered in 21 days.

4. *Primary amputation of leg.*—

i. Hindu male, *æ*t. 25. Right leg caught in the rope of an anchor. Ankle joint dislocated, and soft parts badly lacerated. Amputation at the seat of election. Recovered in 43 days. (Dr. Jameson.)

ii. Hindu female, *æ*t. 60. Bad compound comminuted fracture of leg in a feeble old woman. Amputation by modified circular method at middle of leg. Wound remained aseptic and healed by first intention in 12 days. The track of the drainage tube closed in 27 days.

5. *Amputation of toes.*—In both these cases the great toe was smashed, and removed at the metatarso-phalangeal joint. The wounds healed kindly.

6. *Secondary amputation of the arm for gangrene.*—Hindu male, *æt.* 8. The gangrene in this boy's case was due to tight bandaging for fracture. The arm was removed by oval flaps at the upper third. The wound healed by first intention in 13 days, and the lad left hospital in 19 days. (Dr. Raye.)

7. *Secondary amputation of the leg for gangrene.*—Hindu male, *æt.* 50. Fell from a tree and broke his right leg close to the ankle seven days before admission. The parts were gangrenous, and amputation at the seat of election was found necessary. The wound healed by first intention, and he was discharged in twenty days. (Dr. Jameson.)

8. *Secondary amputation of great toe for gangrene.*—Mahomedan male, *æt.* 36. Injury sustained three weeks ago. Gangrenous toe removed at metatarso-phalangeal joint. Healed by granulation in 40 days. (Dr. Raye.)

AMPUTATIONS FOR DISEASE.

9. *Amputation of the arm for sloughing ulcer.*—Hindu female, *æt.* 45. Sustained a wound of left forearm a fortnight before admission, which took an unhealthy action, and has resulted in a large sloughing cavity exposing muscles and tendons and full of maggots. Amputation of the arm at its upper third became necessary. The wound healed by first intention, and patient was discharged in 14 days. (Dr. Raye.)

10. *Amputation of the arm for myeloid sarcoma.*—Hindu male, *æ*t. 30. Large tumour of elbow 18 inches in circumference, of two years' growth. Arm removed at upper third by circular method. Wound healed in 15 days, and patient left hospital 26 days after operation. The tumour was soft and extensively hollowed out by cystic cavities containing sanguineous serum.

11. *Amputation of finger for whitlow.*—Hindu male, *æ*t. 35. Whitlow of the periosteal variety causing necrosis of phalanges.

12. *Amputation of thigh for disorganized knee-joint.*—Hindu male, *æ*t. 40. His left knee-joint had been resected four years ago. During the last year or so he has had abscesses of the joint and lower part of the thigh, followed by extensive disorganization of the soft parts and necrosis of the femur. Amputation was performed at the lower third of the thigh by long anterior and short posterior flaps. The wound healed mostly by first intention. Some constitutional disturbance occurred from the fourth to the seventh day and some bagging took place about the eighteenth day, requiring reinsertion of drainage tubes. He was detained in hospital for 90 days. (Dr. Rayer.)

13. *Amputation of the leg for mycetoma.*—
i. Hindu male, *æ*t. 50. Disease of two years' duration. Foot and ankle riddled with sinuses reaching the softened bone. No discharge of white or black particles. Amputation of lower third of leg by Teal's method. The wound was progressing favorably, but the patient, a feeble old man, got despondent, and refused his food.

He died of marasmus and exhaustion fourteen days after the operation.

ii. Hindu male, *æ*t. 35. Disease of three years' duration implicating foot and ankle. Both white and dark particles had been observed to issue out of the sinuses. Amputation by modified circular method at lower third of leg. Flap united by first intention. Discharged in 49 days. (Dr. Raye.)

14. *Amputation of leg for epithelioma of foot.*—Hindu male, *æ*t. 40. Had gangrene of both feet 15 years ago resulting in spontaneous amputation. Epithelioma appeared in the stump of the left foot necessitating amputation three years ago, and about four months ago the right stump became similarly affected. The foot was removed above the ankle. Part of the posterior flap sloughed and the wound healed by granulation in 40 days.

15. *Syme's amputation for caries of the ankle.*—Hindu female, *æ*t. 11. Sustained an injury of the foot six months ago, which has resulted in caries of the tarsus and extensive ulceration. Foot removed by Syme's method above the ankle. The lips of the wound healed by first intention, but the track of the drainage tube remained long open. Discharged about 80 days after operation. (Dr. Raye.)

16. *Chopart's operation for sarcoma.*—Hindu female, *æ*t. 30. The tumour was of five months growth, and attached to the dorsum of the foot at its outer aspect. Disarticulation was effected between the first and second rows of tarsal bones by Chopart's method. The wound healed by

first intention, and patient was discharged in 44 days. (Dr. Rye.)

17. *Amputation of the great toe for necrosis.*—This amputation was performed by a lady student (Miss Perry). The necrosis had resulted from an injury by broken glass.

* * * The most noteworthy circumstance connected with these amputations is the trifling mortality, which contrasts so strikingly with the early history of the hospital (4 against 66 per cent.) It is true that none of the cases belonged to those categories which offer faint hope of recovery, *e. g.*, large amputations for severe and multiple injuries, amputations for spreading traumatic gangrene, osteomyelitis and other septic conditions, amputations for secondary hæmorrhage in which much blood has been already lost, &c., &c. On the other hand, no selection was made, and many of the subjects were in feeble health. The absence of constitutional disturbance and surgical accidents attest the success of antiseptic measures, which may be said to have robbed amputations *per se* of all danger to life.

MALIGNANT TUMOURS.

1a. *Epithelioma of heel.*—Hindu male, *æt.* 36. Had a warty growth of right heel which was twice removed, and recurred as often. The surrounding skin is infiltrated. The diseased parts were removed by a circular incision placed well beyond the circumference of the disease; the underlying os calcis was freely gouged out. The wound healed slowly by granulation, and he left hospital without any sign of recurrence in 96 days.

1b. *Epithelioma of the penis*.—i. Mahomedan male, *cet.* 32: Disease of four months' duration involved about a third of the free portion of the penis, which was amputated near the scrotum by Hilton's method, the corpus spongiosum being left longer than the cavernosa, the fibrous walls and septum of which were brought together by two catgut stitches. The wound healed by granulation, and patient was discharged in 54 days.

ii. Hindu male, *cet.* 50. Disease of six months' duration, involving half of the penis which was removed in the same manner. The wound healed in 18 days. (Dr. Raye.)

iii. Hindu male, *cet.* 45. Duration one year confined to glans and prepuce. Half of the penis removed. Recovered in 31 days. (Dr. Raye.)

iv. Hindu male, *cet.* 59. Disease appeared eight months ago, involved about one-third of the penis, one half of which was removed. Recovered in 22 days.

* * I have found that transfixing the penis transversely through the corpora cavernosa and applying an elastic cord above the needle is an excellent method of controlling hæmorrhage in these cases. The needle also indicates the level of operation. I have abandoned the practice of closing the wound by stitches, having encountered several instances in which this procedure led to unhealthy action and severe local and constitutional disturbance. This was due, no doubt, to urine having obtained access to the cavity of the wound.

2a. *Scirrhus of breast*.—i. Hindu female, *cet.* 50. An ulcerated cancer of right breast of five months' duration, implicating the surrounding

skin extensively and associated with diseased glands in the axilla and root of the neck. The breast was removed by an elliptical incision placed well outside of the diseased area. The affected glands were also removed from the axilla and the root of the neck through the axilla. Flaps were taken to close up the large wound; drainage tubes were inserted in suitable positions, and the wound dressed with all possible antiseptic care. The operation was too much for this old feeble subject, and she died in five days of chronic shock.

ii. Hindu female, *æt.* 35. Very hard cancer of left breast of one year's duration, ulcerated in the centre. Axillary glands enlarged. The breast was removed and axilla cleared out. The edges of the wound were brought together, but afterwards gaped, and healing took place mostly by granulation. She left hospital on the 7th of September, 67 days after operation; but returned with a recurrence of the disease in February 1890. Nothing more could be done for her. (Dr. Raye.)

2b. *Scirrhus of the axilla*.—European male, *æt.* 34. Perceived a swelling in his axilla two years ago consequent on the kick of a rifle. It has gone on increasing and broke about ten months ago. There is now a foul excavated ulcer, set in a hard mass implicating the skin. Axillary glands enlarged and indurated. The diseased mass and glands were thoroughly extirpated and the cavity healed by granulation in 26 days.

3a. *Sarcoma of male breast*.—Hindu male, *æt.* 58. Has had a tumour of the left breast of the

size of an orange for the last twenty years which has been growing rapidly for the last three months. It has now attained a large size, measures 23 inches at the base, is tense and tender, and the surface reticulated with large veins. The skin covering it is adherent, and infiltrated; base moves freely; general health good. Anticipating free bleeding the operation was commenced by making two punctures at each pole of the tumour and passing four packing needles, 8 inches long, in the loose cellular tissue between the base of the tumour and the chest wall, so that their ends crossed as shown



in the diagram. An elastic cord was then wound round the eight ends of the needles, by which the base of the tumour was tightly constricted, and its mass made prominent. Over incisions were made above and below in healthy skin, and the tumour was removed, the

elastic loop tightened and contracted the wound to about 3 inches diameter. Only one vessel bled that came from between two ribs. The cord was gradually loosened, and about 100 points required tying. The wound gaped to about 20 inches diameter, and the edges were brought together with some difficulty. Drainage tubes were inserted and an antiseptic dressing applied. The edges did not unite throughout by first intention. Some gaping occurred, and a little sloughing of the superior flap owing to the dragging of a stitch. Repair eventually took place by granulation. On the twentieth day an enlarged axillary gland was removed, but it was found to

cystic. There was a little constitutional disturbance after the operation. The patient improved in health and he left hospital in 83 days after the operation with no sign of recurrence.

b. Sarcoma of forearm.—Hindu female, *æt.* 60. Has suffered from a tumour of the under side of right forearm just below the elbow joint for two years. It was removed two months ago but recurred. The tumour is now as large as an orange. It was thoroughly extirpated together with a piece of the underlying ulna. The wound healed by granulation in 70 days.

Sarcoma of gluteal region.—Mahomedan male, *æt.* 19. The left leg was removed below the knee for sarcoma one and a half year ago; the present tumour appeared four months ago. It is situated over the left os ilii and sacrum, is about the size of an orange and deeply placed. The tumour was exposed by a T-shaped incision and removed together with a considerable portion of the underlying ilium. Bleeding was free and had to be stopped by the actual cautery. The disease could not be entirely removed. He lingered for 52 days, and died of exhaustion.

4. *Fibro Sarcoma of Upper Jaw.*—Hindu male, *æt.* 35. Malignant epulis of right upper jaw of six months' duration. The jaw bone was removed with exception of the orbital plate and malar process. The skin wound healed by first intention, and the patient left hospital in 20 days.

Fibro sarcoma of lower jaw.—i. Hindu male, *æt.* 50. The tumour of one year's growth lay over the right angle of the lower jaw. It was

hard and about the size of a walnut. It was exposed by two oval incisions and enucleated. The wound healed by first intention, and patient left hospital in 22 days. (Dr. Jameson.)

ii. Mahomedan male, *æt.* 13. Malignant epulis of right side of lower jaw in situation of bicuspid teeth. Had been removed six or seven times, but always recurred. The teeth on each side were extracted, the growth removed by strong scissors and the alveolar process freely cut away by bone forceps. The wound healed by granulation, and he left hospital in 47 days without any sign of recurrence.

5. *Chondro-sarcoma of hand.* — Eurasian male, *æt.* 40. Has had a small tumour on the back of the right hand ulnar side for 15 years. During last four months it has taken an active growth. The ring and little fingers were removed together with their metacarpal bones and the tumour. Repair took place mostly by first intention in 45 days. (Dr. Raye.)

6. *Lympho-sarcoma of axilla.* — Hindu male, *æt.* 28. Noticed a nodule in the right axilla two years ago. This has grown rapidly till the axilla is distended with a large nodulated mass which is also felt above the clavicle. The mass was exposed by free incision and removed. Hæmorrhage which was profuse, was controlled by pressure forceps until the points were secured by ligature. The operation was followed by pneumonia, of right base. This brought him very low but he eventually recovered and left hospital 50 days after operation. The wound gaped and healed mostly by granulation. (Dr. Raye.)

NON-MALIGNANT TUMOURS.

1a. *Elephantiasis of the prepuce*.—i. Hindu male, *æt.* 27. A case of paraphimosis with œdematous prepuce following venereal sore. The swollen and thickened prepuce was dissected off and the edge of the skin stitched to the corona glandis. The wound healed partly by first intention and partly by granulation in 27 days.

ii. Hindu male, *æt.* 28. Elephantoid thickening of prepuce of eight months' duration, scrotum healthy. A circular incision was made near the root of the penis and the hypertrophied tissue dissected off. The prepuce was adherent to the glans, and the meatus urinarius which was contracted had to be slit. The parts healed by granulation in 27 days.

iii. Hindu male, *æt.* 23. Similar case, of syphilitic origin, similarly treated; stitches were inserted and the wound healed mostly by first intention in 29 days. (Dr. Raye.)

iv. Mahomedan male, *æt.* 50. Elephantiasis of prepuce stricture of urethra near meatus and scrotal fistula. The hypertrophied mass was dissected off; the urethral orifice slit, and a full sized bougie passed. This was continued every fourth day, and patient left hospital cured 66 days after the operation.

* * These cases are very common in Bengal, and the treatment adopted, which may be called circumcision by dissection, always gives satisfactory results.

b. *Elephantiasis of the Scrotum*.

i. Mahomedan male, *æt.* 35. Scrotal tumour of eleven months' duration. 16 inches in circum-

ference. Removed in the usual way. Recovered in 57 days.

ii. Mahomedan male, *æ*t. 53. One and a half year's duration. Hydrocele of five years' standing. History of periodic fever. Removed in the usual way. Weighed 2lbs. Recovered in 64 days.

iii. Mahomedan male, *æ*t. 30. One year's duration. Usual operation. Small hydrocele. Weighed 2lbs. Discharged in 67 days.

iv. Hindu male, *æ*t. 38. Duration $1\frac{1}{2}$ year. Penis not involved. The scrotum was removed as usual, but the penis was not decorticated. Small hydrocele. Recovered in 34 days.

v. Hindu male, *æ*t. 31. Two years' duration. Usual operation. Hydrocele on right side, left tunica adherent. Weighed 2lbs. 1oz. Recovered in 60 days.

vi. Hindu male, *æ*t. 20. Two years' duration. Usual operation. Right hydrocele, left tunica adhered. Weighed 2lbs. 3oz. Recovered in 75 days.

vii. Hindu male, *æ*t. 35. Three or four years' duration. Usual operation. Right hydrocele, left tunica ossified; dissected off. Tumour weighed 3lbs. 12oz. Recovered in 60 days.

viii. Hindu male, *æ*t. 35. Two years' duration. Usual operation. Weighed 1lb. 12oz. Recovered in 69 days.

ix. Hindu male, *æ*t. 80. Admitted 21st January with scrotal tumour complicated with inguinal hernia. The hernia was cured by operation in the first instance, and the tumour, which weighed 4lbs., removed on 27th February in the usual way. Recovered in 46 days after the last operation.

x. Mahomedan male, *æ*t. 40. One year's duration. Usual operation. Right hydrocele. Weighed 2lbs. Recovered in 57 days.

xi. Mahomedan male, *æ*t. 30. Had gonorrhœa four years ago, followed by stricture and urinary fistulæ. The tumour began to grow about a year ago. Admitted 7th February. Perinæal section performed 12th February. The scrotal tumour was removed on the 25th March. The scrotum and pubes were riddled with sinuses and urethra destroyed. The perinæal wound was enlarged and a Syme's catheter tied in. The operation was then completed as usual. Weight 2lbs. 3oz. Made a satisfactory recovery.

xii. Hindu male, *æ*t. 35. Admitted with elephantiasis of the scrotum and inflammation of left testicle and tunica. The right testicle was dissected out and the left testicle which was disorganized, removed by castration. The scrotum was then taken away by a circular incision, and the remaining testicle stitched between the lips of the wound. Patient made a good recovery in 41 days. (Dr. Jameson.)

xiii. Hindu male, *æ*t. 38. Case of lymph scrotum of seven years' duration and reducible right inguinal hernia of fourteen years' standing. Admitted 21st July. Both conditions were dealt with at the same time (30th July). The sac of the hernia was first exposed, dissected out, tied at the neck and removed, the pillars being brought together by catgut stitches. The tumour was then excised in the usual manner. The operation was not followed by any constitutional disturbance, and patient made a good recovery in 71 days. (Dr. Raye.)

xiv. Hindu male, *æ*t. 40. Twenty years' duration. Usual operation. Recovered in 48 days. (Baboo Syama Nirod Das Gupta.)

xv. Hindu male, *æ*t. 43. Scrotal tumour of five years' duration. On slitting up the prepuce, the glans was found to be epitheliomatous, and the penis was amputated. The operation was then completed as usual. The parts healed kindly, and he left hospital without any sign of recurrence of the cancer in 75 days. (Dr. Raye.)

xvi. Hindu male, *æ*t. 20. One year's duration. Usual operation. Large left hydrocele. Healed in 51 days. (Dr. Jameson.)

xvii. Hindu male, *æ*t. 35. Five years' duration. Usual operation. Double hydrocele. Patient died of shock, from which he never recovered, on the fifth day. (Dr. Adie.)

xviii. Hindu male, *æ*t. 21. Three years' duration. Usual operation. Hæmatocele on right side, large hydrocele on left. Discharged in 45 days. (Dr. Jameson.)

xix. Hindu male, *æ*t. 47. Five years' duration. Usual operation. Double hydrocele. Tumour weighed 66lbs. Recovered in 48 days.

xx. Mahomedan male, *æ*t. 37. Three years' duration. Usual operation. Small right and large left hydrocele. Discharged in 77 days.

xxi. Hindu male, *æ*t. 24. Three years' duration. Usual operation. Right hydrocele. Recovered in 83 days. (Dr. Raye.)

xxii. Mahomedan male, *æ*t. 30. Eight years' duration. Usual operation. Double hydrocele. Recovered in 61 days. (Baboo Syama Nirod Das Gupta.)

xxiii. Mahomedan male, *æ*t. 40. Seven years' duration. Usual operation. Recovered in 55 days.

xxiv. Hindu male, *æ*t. 50. 16 years' duration. Usual operation. Could not pass water after the operation, and in the attempt to relieve the bladder a false passage was made. This necessitated the performance of Cock's operation. He made a good recovery in 64 days from both operations. (Syama Nirod Das Gupta.)

* * * The operation performed in these cases was in every respect the same as has been described in previous reports. Great care was taken in keeping the wound aseptic and with unvarying success. The deep dressings were seldom removed until ten or twelve days had elapsed, and by that time granulation material has filled the wound to the level of the skin. The subsequent organization of this and cicatrization of the wound is a very slow process, and it is difficult to see how it can be accelerated. All the tumours, with one exception (xix) were small. Patients have now got into the habit of applying for relief before these tumours acquire great bulk. In two cases inguinal hernia existed as a complication. In one (ix) the hernia was first radically cured by operation, and the scrotal tumour subsequently removed. In the other (xiii) both hernia and tumour were operated on simultaneously. Both these cases recovered without a bad symptom. In one case (xv) epithelioma of the penis existed. It was not discovered until the preputial canal was slit up. The penis was amputated and tumour removed. The patient recovered. Stricture and urinary

fistulæ complicated another case (xi); a perinæal channel for the outflow of urine was established before the tumour was removed. In another instance perinæal section without a guide (Cock's operation) had to be resorted to the day after operation to relieve a distended bladder.

c. Elephantiasis of labia.

i. Hindu female, *æt.* 28. A tuberculated hard enlargement of both labia majora of syphilitic origin removed by incision. The lips of the wounds were brought together with catgut. Some condylomatous growths were also removed from the anus. Discharged well in 43 days.

ii. Hindu female, *æt.* 22. Similar case, similarly treated, with similar result.

iii. Hindu female, *æt.* 25. Similar case, complicated with a recto-vaginal fistula. The tumours were removed and fistula laid open. Recovered in 31 days.

iv. Hindu female, *æt.* 25. Similar case. The prepuce of the clitoris and anterior wall of the vagina were also thickened and there were condylomata around the anus, all the thickened parts were excised. The wound healed in 10 days.

v. Hindu female, *æt.* 26. Large pendulous tumours of left labium reaching to the knee ulcerated at fundus. The elastic cord was applied as in scrotal tumours and the mass removed: edges of wound stitched after the vessels had been tied. Tumour weighed 14lbs. Recovered in 20 days.

2a. *Lipoma of forehead.*—Hindu male, *æt.* 20. A fatty tumour about the size of an orange situate in the centre of the forehead; commenced

at four years of age after an injury to the part by a fall. Exposed by elliptical incision and enucleated with ease. Wound healed by first intention. Discharged in 11 days.

2b. *Lipoma of the neck*.—Hindu male, *æ*t. 59. Fatty growth of three years' duration situated at the nape of the neck, size of a bael fruit. Removed by incision. Wound healed by first intention. Discharged in 11 days.

3a. *Myxoma of soft palate*.—East Indian male, *æ*t. 21. A hard tumour of ten months' growth, situated to the right of the fauces and pushing the soft palate and uvula inward; mucous membrane moveable over tumour which could be felt obscurely behind the ramus of the jaw. A curved incision was made at the angle of the jaw, and another outwards and downwards from its convexity. This was deepened until the inner surface of the internal pterygoid muscle was reached. The tumour was got at by following this surface. It was enucleated by the finger and removed by two scoops. A drainage tube was inserted and the corners of the wound stitched. The tumour was found to be a typical example of myxoma. Patient recovered in 30 days.

3b. *Myxoma of the nose*.—Mahomedan male, *æ*t. 63. Left nostril blocked and left nasal cavity dilated by a large polypoid mass of fifteen years' growth. It protrudes in front and can be felt through the posterior nares. The nostril was freely slit and the mass detached by chisel and scissors. A satisfactory recovery ensued in 11 days. (Dr. Raye.)

4. *Angioma of lip*.—i. Hindu male, *æ*t. 18. A soft compressible swelling of right upper

lip of two years' growth, size of a walnut. Hæmorrhage was controlled by two polypus forceps closed by drainage tubing tied to the handles and meeting at an angle. The growth was then removed by a Λ -shaped incision. Several vessels were secured and the lips of the wound carefully approximated by silk and horse-hair stitches. Patient made a good recovery in 16 days.

ii. Hindu male, *æt.* 17. Has a large cavernous angioma of right upper lip of two years' duration. It was twice injected by saturated solution of tannin with partial success and finally excised by a Λ -shaped incision. A curved forceps made specially for the purpose was used to control bleeding during the two last operations.

5a. *Sebaceous cyst of scalp.*—Mahomedan male, *æt.* 60. Situated behind right ear size of an orange, commenced forty years ago. Dissected out. Wound healed by granulation in 22 days. (Dr. Rayer.)

5b. *Sebaceous cyst of thigh.*—Hindu male, *æt.* 30. A cyst grew over the front of the left thigh to the size of an orange during the last two years, and was punctured by a native doctor a fortnight ago. A sinus remains. This was slit up, the cavity was laid open crucially and the wall of the cyst removed by a sharp spoon. It healed by granulation in 19 days. (Dr. Rayer.)

c. *Bursal cyst of elbow.*—European male, *æt.* 26. A fluctuating swelling of the size of a hen's egg over the right olecranon process. It was aspirated but refilled and twelve days later dissected out. The wound healed by first intention in 16 days.

6. *Condyloma of anus*.—Eurasian male, *æt.* 22. The condylomata were very large and ulcerated. They were removed by scissors. Made a good recovery in 37 days.

7. *Removal of hæmorrhoids*.—One of these operations was performed by clamp and cautery, one by ligature and excision and one by scissors. In this Dr. Raye carried out Whitehead's plan in full detail. A satisfactory result was obtained in three weeks. One was a case of prolapse of the rectum in a Hindu male of 30. The disease dated from an attack of dysentery nine years ago. The protrusion measured 4 inches. Three wedge-shaped pieces of redundant mucous membrane including the skin of the anal verge, were removed by clamp and cautery. Patient left hospital apparently cured in 37 days.

8a. *Removal of diseased cervical glands*.—

i. East Indian female, *æt.* 37. Glands of left side of neck enlarged from struma, three sinuses leading to them. The glands were enucleated and sinuses scraped, the wound stitched and drainage tubes inserted. Recovered in 78 days.

ii. iii. East Indian male, *æt.* 30. Both sides affected. Required two operations at a month's interval. Recovered, detained in hospital for 27 days. (Dr. Raye.)

8b. *Removal of diseased axillary glands*.—Hindu male, *æt.* 40. Sinuses in left axilla leading to enlarged glands. These were extirpated and the sinuses scraped. Recovered in 24 days.

8c. *Removal of diseased inguinal glands*.—In some of these sixteen cases the disease was of

strumous in others of venereal origin, in some of both. Sinuses existed in some cases and not in others. The disease affected one or both sides. Efforts to procure resolution had failed in all. The diseased glands were exposed by incision and removed by enucleation or dissection according to the existence or otherwise of much adhesion and matting. A satisfactory result was obtained in all the cases.

VII. *Removal of date-thorn from the foot.*—Hindu male, *æt.* 13. A date-thorn entered the sole of the foot a year ago. The dorsum is now painful and swollen, and there is a sinus between the first two toes through which a hard rough substance can be detected. This was enlarged, and another opening made on the sole of the foot through which a date-thorn two inches long was extracted. The wound healed by granulation in 30 days. (Dr. Rayer.)

VIII. CASES OF LITHOLAPAXY.

i. Hindu male, *æt.* 60. Symptoms of eight years' duration. Two introductions of crushing and evacuating instruments sufficed. The débris weighed 5 drs. 12 grs. Discharged in 16 days.

ii. Hindu male, *æt.* 59. Symptoms of five years' duration. Two stones were detected, crushed and evacuated. The débris weighed 1 oz. 2 drs. Slight cystitis. Discharged in 9 days. (Dr. Rayer.)

iii. Mahomedan male, *æt.* 40. A stone weighing 2 oz. and 2 drs. was crushed and removed by five introductions. Slight cystitis followed. Discharged in 9 days. (Dr. Rayer.)

iv. Hindu male, *æt.* 40. Symptoms of

4 years' duration. A calculus weighing 3 drs. 12 grs. was crushed and removed by four introductions. No cystitis. Discharged in 4 days. (Dr. Raye.)

v. Hindu male, *æt.* 35. Symptoms of 1½ year's duration. Six introductions necessary. Débris weighed 2 oz. 2 drs. 30 grs. The operation was succeeded by fever and suppression of urine. Diarrhœa set in, and death ensued on the 7th day after operation. Both kidneys were extensively diseased. (Dr. Raye.)

vi. Hindu male, *æt.* 35. Symptoms of two years' duration. Eight introductions. Débris weighed 2 oz. 5 drs. 40 grs. The operation was followed by a sharp attack of cystitis, which subsided on the 5th day. Discharged in 23 days. (Dr. Raye.)

vii. Hindu male, *æt.* 25. Symptoms of one year's duration. Four introductions necessary. Débris weighed 1 oz. 1 dr. Slight cystitis. Discharged in 16 days.

IX. INCISIONS.

1. *Tracheotomy for laryngitis.*—Mahomedan male, *æt.* 35. Admitted with urgent dyspnœa from laryngitis of two days' duration. Tracheotomy was performed at once, but the man died of exhaustion in five hours.

2. *Incision for incarcerated inguinal hernia.*—Hindu male, *æt.* 55. Has had reducible right inguinal hernia for 15 years. The hernia descended a few hours before admission while straining at stool. Tumour tense and tympanitic. Symptoms of shock present. Taxis after the application of ice failing, the neck of the

sac was exposed, a tight band divided, and the contents returned without opening the sac. The pillars were brought together with catgut and the wound stitched. It healed mostly by granulation, having been forced open by a descent of the rupture in 23 days. Patient was discharged with a truss in 37 days.

3. *Operation for strangulated inguinal hernia.*—i. Hindu male, *æt.* 40. The hernia descended and became irreducible two days before admission. Symptoms of obstruction and strangulation well marked. The sac was laid open, and adherent omentum and a knuckle of small intestine exposed. The omentum was divided after ligature in sections and the bowel returned. The pillars were brought together and wound stitched without any further interference with the sac. The patient made a satisfactory recovery in 43 days. (Dr. Raye.)

ii. Hindu male, *æt.* 26. Strangulation of nine days' duration. Patient very prostrate. The sac was opened and the rupture found to be of the congenital variety. It contained matted omentum enclosing a coil of intestine. The stricture was found on laying open the inguinal canal, to be caused by a ring of omentum. The omentum was removed after ligature in sections and the gut returned. The sides of the canal were brought together and the wound stitched. The patient suffered from shock for four hours from which he recovered slowly. The wound healed by granulation in 41 days. (Dr. Raye.)

iii. Mahomedan male, *æt.* 30. Strangulation of 16 hours' duration. Condition very low. Sac opened, stricture divided, and intestine

returned, wound stitched. Did not recover from prostration, and died in a few hours of exhaustion. (Dr. Raye.)

iv. Mahomedan male, *æt.* 45. Left oblique inguinal hernia. Strangulation of eight days' duration. Symptoms pronounced but not intense. Sac laid open, stricture (at external ring) divided, and contents (omentum and small intestine) returned, and the operation was then completed as for radical cure. Patient made an excellent recovery in 38 days. (Dr. Jameson.)

v. Hindu male, *æt.* 40. Right oblique inguinal; strangulation of eight hours' duration. Ice and taxis tried in vain. Operation as in last case. Recovered in 42 days. (Dr. Adie.)

vi. Hindu male, *æt.* 29. Right oblique inguinal hernia. Strangulation of one day's duration. Symptoms acute, patient very low. The sac was opened and found very much congested. Bowel and omentum exposed. The latter was adherent and was divided in sections and relieved. The operation was completed as for radical cure. Patient died of shock in 40 hours. (Dr. Jameson.)

4. *Operation for strangulated femoral hernia.*—Hindu male, *æt.* 30. The rupture occurred under sudden and violent exertion three days before admission. Bowels obstructed, vomiting. A tense tender tympanitic swelling at base of Scarpa's triangle. Ice and taxis applied without effect. The bowel was exposed by careful dissection. There was no sac. The stricture was situated at Gimbernat's ligament, which was divided. The hernia was then reduced and the wound stitched. On the sixth day

faces escaped from the wound, but the fistula closed spontaneously, and the wound healed in 22 days. Discharged 24 days after operation. (Dr. Rye.)

5. *Operations for the radical cure of hernia.*

i. Hindu male, *æt.* 40. Large right scrotal hernia of two years' duration. Has also got double hydrocele and scrotal elephantiasis. The sac was exposed, isolated, tied at the neck, and removed. The pillars were stitched together, a counter opening made in the scrotum, and the wound closed and dressed antiseptically. Operation performed on 26th January. The parts healed kindly, and the scrotal tumour was removed on 27th February (see VI, 1b. ix). He was discharged well on the 14th of April.

ii. Mahomedan male, *æt.* 25. Right oblique inguinal hernia of 18 years' standing. The rupture was found to be congenital. The sac was removed and tunica pared close to the testicle. The wound healed by first intention in eight days. Discharged with a truss in 27 days.

iii. Burmese male, *æt.* 27. Right oblique inguinal hernia. The usual operation was performed. The wound healed by granulation. Patient discharged in 56 days.

iv. The operation in this case was performed at the same time as for the removal of scrotal tumour (see VI, 1b. x). (Dr. Rye.)

v. Mahomedan male, *æt.* 30. Right oblique inguinal hernia of two years' duration. The usual operation was performed. The ring was laced with kangaroo tendon. The wound healed by first intention in seven days, and patient was discharged in 21 days with a truss. (Dr. Rye.)

vi. Hindu male, *æ*t. 3. Right oblique inguinal hernia of two years' duration. Usual operation. Wound healed by granulation. Discharged in 37 days. (Dr. Jameson.)

vii. Hindu male, *æ*t. 50. Left oblique inguinal hernia of seven years' duration. Complicated with scrotal tumour and a sloughy ulcer on left side of scrotum. The usual operation was performed. The wound healed slowly by granulation. Discharged in 70 days. (Dr. Raye.)

viii. Hindu male, *æ*t. 22. Right oblique inguinal hernia of one year's duration. Usual operation. Wound healed by first intention in 16 days. Discharged in 39 days.

ix. Hindu male, *æ*t. 35. Left oblique inguinal hernia. Subject to bronchitic asthma. Operation performed at patient's earnest solicitation in the usual manner. The patient died of double pneumonia eight days after operation. The wound remained aseptic and was healing kindly.

x. Hindu male, *æ*t. 36. Right oblique inguinal hernia. Had two hydroceles which were successfully tapped and injected before the hernia operation was performed. The wound healed by first intention, and he was discharged in 17 days.

xi. Mahomedan male, *æ*t. 40. Right oblique inguinal hernia. He had been operated on one year and seven months' ago in the hospital. He remained well for a year, but, during the last seven months, a new hernial protrusion has formed in the site of the old. The abdominal walls are very lax. He has a hernia on the left side also. The usual operation was performed.

Some difficulty was experienced in dissecting out the sac which was closely adherent to the tissues surrounding it, in consequence of the former operation. At its fundus, a ring of thick tissue with central hollow, the expanded neck of the previous sac, was found. Special care was taken to close the aperture. The cavity of the wound got filled with blood and he suffered from fever and bronchitis for 11 days. The wound gaped and healed by granulation. He was discharged cured with a double truss in 45 days.

xii. European male, *æ*t. 12. Left oblique inguinal hernia. Usual operation. Made an excellent recovery in 19 days.

* * * The steps of the operation performed in these cases were precisely the same as described in full detail in previous reports. A counter opening was made in the scrotum for drainage in all cases. In most of the cases a well fitting truss would, no doubt, have kept the rupture under control; but patients of the classes who resort to hospital cannot afford to purchase trusses, and when they are supplied with them, they have not the sense to wear them properly, and they soon become useless, and are causes rather of danger than help. The operation in the fatal case was performed at the repeated and earnest request of the patient, rather against my judgment. He had delicate lungs, and though he was kept under treatment, and with benefit for some time, he developed double pneumonia very soon after the operation and died of it. None of the other cases gave any cause for anxiety. Each patient was provided with a truss on discharge with injunctions to wear it for six months.

None of them have been seen or heard of since the operation, except No. xi, who has come this year to get the left hernia operated on. This has been done successfully; the right side remains firm. This man has undergone three operations for rupture.

6a. *Laparotomy for obstruction.* — Hindu male, *æt.* 20. Bowels completely obstructed for 28 hours, vomited several times, abdomen tympanitic and tender, dilated coils visible, very restless and anxious, clammy sweats, pulse small and soft. The belly was opened, and intestines, which were much distended and congested, were systematically examined from end to end, but no cause of obstruction found. Patient died of shock $10\frac{1}{2}$ hours after the operation. On *post-mortem* examination, the intestines were found to be congested, but no cause of obstruction could be discovered, except a band of mesentery crossing a loop of small intestine in the right iliac fossa. (Dr. Raye.)

b. *Laparotomy for wound of stomach.* — Mahomedan female, *æt.* 40, sustained a stab in the left hypochondrium caused by a clasp knife. Particles of food are said to have come through it. The abdomen is painful, and patient somewhat collapsed. The external wound was enlarged, and search made for the intestinal wound, which was found in the upper curvature of the stomach. It was stitched by Lembert's method, and the peritoneal cavity having been thoroughly cleansed, the external wound was stitched, a drainage being inserted. A gastric fistula formed, which eventually closed without further operation, and patient left the hospital well in 73 days. (Dr. Raye.)

7. *Lumbar colotomy*.—Eurasian female, *æt.* 40. Case of malignant stricture of the rectum with obstruction; the disease can be detected by rectal examination. The lumen of the gut is almost obliterated. Purgatives have been tried without effect. The intestines are much distended with fæces and flatus, and the patient's condition is very miserable. The descending colon was opened in the left loin without difficulty. The operation gave great relief. Fluid fæces in large quantities came freely through the opening. Patient died of exhaustion five days after the operation.

8a. *Tenotomy for talipes equinus*.—Hindu male, *æt.* 13. The condition resulted from a sprain of the ankle joint sustained a year and a half ago. The tendo-achillis was divided subcutaneously, the ankle joint flexed, and the limb put on a McIntyre splint. The patient's stay in hospital was prolonged by a sloughing ulcer, which was caused by the pressure of the foot piece of the splint on the pad of the toes. He left after 106 days' residence with a useful foot.

8b. *Tenotomy for talipes equino-varus*.—Hindu male, *æt.* 11. The deformity is due to infantile paralysis, the tendo-achillis, tibialis muscles and plantar fascia were divided and suitable splints applied. He left hospital with a useful limb after 84 days' residence. (Dr. Raye.)

c. *Tenotomy for flexion of hip-joint*.—Hindu male, *æt.* 17. Admitted with burrowing sinuses of right groin and thigh, which were laid open and scraped. In healing they caused acute flexion of the hip-joint. In order to

remedy this condition, the rectus femoris tendon was divided subcutaneously near its origin. In stretching the limb the skin gave way transversely, and a lozenge-shaped wound resulted. This was enlarged and deepened so as to remove all resistance to straightening. The wound was dressed antiseptically, and a weight attached to the limb for extension. When the wound healed he was allowed to walk about with crutches and a bag containing 4lb. of shot put round the ankle. Under this treatment he left with a straight and useful limb after having spent 7 months and 2 days in hospital.

9. *Incision for suppurated mastoid cells.*—Hindu female, *æt.* 7. Admitted with a tense painful swelling behind right ear and running of pus from the ear. The soft parts were divided with a knife and the bone with a chisel. Discharged well in 15 days. (Dr. Raye.)

10. *Incision for hæmatocele.*—In these three cases the cavity was inflamed, and was laid open by free incision, rendered and kept aseptic and treated for granulation. A cure was obtained in 44, 48, and 49 days.

11. *Incision for inflamed hydrocele.*—These three cases were treated similarly by free incision and drainage under antiseptic precautions. The tunica is not so diseased in such cases and smaller openings suffice. The cavity is also more quickly obliterated.

12. *Incision for stricture of rectum.*—Hindu female, *æt.* 30. The stricture was syphilitic and associated with ulcerated piles. The stricture was divided backwards and the piles removed. She recovered in 90 days. (Dr. Raye.)

13. *Incision for atresia oris.*—Hindu male, *æt.* 20. A cicatricial contraction of left cheek near the angle due to bad gumboil; cicatrix divided freely, and mouth forced open by screw gag, which was applied at intervals. Recovered in 27 days.

14. *Internal urethrotomy.*—Hindu male, *æt.* 31. Stricture divided from behind with Civiale's urethrotome, and a No. 12 metallic catheter passed. Discharged with a fully dilated urethra in 19 days. (Dr. Raye.)

15a. *Perinæal section with a guide (Syme's operation).*—i. Mahomedan male, *æt.* 30. Admitted with urinary fistula (scrotal and pubic) and elephantiasis of scrotum. The perinæum was divided, the urethra freely laid open on a guide and a Syme's catheter tied in. This was done on the 12th of February. The fistulæ closed; and the elephantiasis was removed on the 25th of March. (See VIB. 1b. xi).

ii. Hindu male, *æt.* 45. Admitted with urinary fistulæ (perinæal and scrotal) and internal piles. Health indifferent. The perinæum was laid open, the urethra opened freely on a guide and a Syme's catheter tied in, and retained for two days. The piles were removed by Whitehead's method. He had smart fever for two days which subsided. A full-sized bougie was easily passed on the 6th day. On the 9th day the perinæal wound became sloughy, and he got hiccnp and prostration. He lingered on till the 11th day, and died of exhaustion. *Post-mortem* examination was not made.

b. *Perinæal section without a guide (Cock's operation).*—i. Hindu male, *æt.* 35. Admitted with perinæal abscess and retention. A catheter

could not be passed. The abscess was opened, and the urethra divided in front of the apex of prostate. Syme's catheter was passed into the bladder and tied in. Patient left hospital in 12 days. (Dr. Raye.)

ii. Hindu male, *æ*t. 32. Admitted with retention and bleeding from the urethra due to unsuccessful catheterism before admission. Owing to the existence of false passages an instrument could not be introduced into the bladder. The prostatic urethra was opened by Cock's method, and a Syme's catheter introduced and tied in. Patient left hospital in 13 days. (Dr. Raye.)

iii. Hindu male, *æ*t. 38. Has suffered from stricture for 8 years. An abscess formed in perinæo 6 days ago, and when trying to make water on the morning of admission, he felt something give way, and the perinæum and scrotum swelled shortly afterwards. An instrument could not be introduced into the bladder, and Cock's operation was performed and a Syme's catheter introduced. An attempt was then made to divide the stricture by Wheelhouse's method, but nothing could be got to pass through it. Incisions were made in the scrotum. Patient suffered from cystitis for a few days, and absconded 36 days after operation. He was urinating comfortably. (Dr. Raye.)

iv. Hindu male, *æ*t. 65. Admitted with cystitis and ammoniacal urine due to enlarged prostate. The bladder was emptied with No. 2 catheter with some difficulty, and was washed out with a 1 per cent. solution of boracic acid. The instrument had been used thrice daily, and

each introduction was followed by shock and fever. On the 7th day after admission the urethra was opened in front of the prostate, and a soft catheter passed and tied in. It was removed in two days on account of the man's restlessness. The bladder was then regularly emptied and washed out by introducing the instrument per perinæo which was easily accomplished. He died of exhaustion on the 9th day.

v. Hindu male, *æt.* 25. Admitted with extravasation of urine reaching above the umbilicus. Scrotum prepuce and perinæum sloughing. Stricture of 4 years' standing. Repeated attacks of retention. Had not made water for 48 hours before admission. Urethra lacerated by unsuccessful attempts to introduce the catheter before admission. The urethra was opened by Cock's method and a Syme's catheter passed therein. Free incisions were made into the sloughy and œdematous parts. These incisions suppurated and sloughed, and while the sloughs were in process of separation, and the wounds beginning to granulate the man sank from exhaustion 10 days after the operation.

vi. Hindu male, *æt.* 50. Had been operated on for scrotal tumour (VIB. 1b. xxiv), and in trying to relieve his bladder by catheter next day a false passage was made. The urethra was opened by Cock's method and a Syme's catheter passed in and retained for two days. The perinæal wound closed in 27 days, and he left hospital micturating normally when the scrotal wound closed.

c. *Wheelhouse's operation for stricture.*—Hindu male, *æt.* 50. Admitted with stricture

of long standing and urinary fistulæ in perinæo. A filiform whalebone bougie was passed into the bladder and Wheelhouse's bougie down to the stricture which was divided. The penile urethra was found to be narrow and was divided by a urethrotome. The urethra then admitted a No. 9 catheter. A Syme's catheter was passed per perinæo and retained. The urethra was gradually dilated to the full size, the perinæal wound healed, and he left hospital 37 days after the operation. (Dr. Raye.)

16. *Incisions for sinuses.*—These resulted from abscesses in unhealthy subjects which had not been skilfully treated in the first instance. The procedure followed consisted in laying them open freely, scraping thoroughly with a sharp spoon, rendering the cavities aseptic, and keeping them to rest, suitable constitutional treatment being at the same time attended to. The result in all cases was favourable, though in some instances the period of repair was somewhat prolonged.

17. *Large abscesses.*—Six of the cases included under this heading were iliac abscesses, 1 ilio-lumbar, 1 lumbar, 1 mediostinal, 2 popliteal, 1 cervical, and 1 multiple. Antiseptic management was scrupulously carried out, and the result was favourable in all cases, though some of the collections were deep and the incisions required to reach them formidable.

X. REPARATIVE OPERATIONS.

1. *For cicatrix after burn.*—Male Hindu child, æt. 7. The right arm adhered to the side of the chest and the forearm to the front of the

arm by means of cicatricial bands caused by contraction resulting from a burn sustained three years ago. These bands were completely divided, and flaps of skin taken from the neighbourhood and laid on the raw surfaces. Care was taken during the process of repair to prevent reproduction of the deformity. A satisfactory result was obtained in 82 days.

2. *For epispadias and extroverted bladder.*—Mahomedan male, *æt.* 10. Roof of urethra anterior wall of bladder and corresponding portion of anterior abdominal wall deficient. Horizontal ramus of pubes undeveloped, penis very small, and tied down to pubes, testes undescended posterior wall of bladder protruding, ureters visible. Wood's operation was successfully performed by Dr. Raye, and a second operation of the same sort lower down by Dr. McLéod. These operations provided a covering for the bladder and reduced the size of the opening into it, so that although constant dribbling of urine continued, the patient's condition was much more comfortable. The case was in fact reduced to one of aggravated epispadias.

3. *For vesico-vaginal fistula.*—Hindu female, *æt.* 60. Prolapsus of uterus and anterior wall of the vagina in which there is a large hole revealing the interior of the bladder which is also prolapsed. These conditions are said to be due to a fall sustained eight months ago. The edges of the fistula were carefully pared and the sides of the rent brought accurately together by silk stitches while the parts were prolapsed. The prolapsus was then returned and the parts kept in position by carbolized tow, a catheter

being retained in the bladder. The stitches cut their way out and the rent gaped. Patient declined a second operation. (Dr. Jameson.)

4. *For hernia testis.*—Hindu male, *æt.* 30. Syme's operation was performed by Dr. Raye after scraping off some sloughs and paring the tunica. Patient left hospital on the 17th day after operation with a granulating ulcer.

5. *For protrusion of the omentum through an abdominal wound.*—Hindu male child, *æt.* 7. Sustained a wound of right hypochondrium by falling on a piece of glass. Omentum protruded, the wound was slightly enlarged, the omentum thoroughly washed with an antiseptic lotion and reduced, and the wound carefully stitched. It healed by first intention, and the child left hospital perfectly well in 11 days. (Dr. Jameson.)

6. *For ulcer of the sole of the foot.*—Hindu male, *æt.* 22. The skin of the sole of the right foot was entirely removed by the claws of an alligator. When the sloughs separated, four flaps were taken from the sides of the foot, and stitched with catgut on the granulating surface. This proceeding greatly accelerated repair, and the sole got eventually covered with strong cicatricial material.

XI. OPERATIONS NOT CLASSED.

1. *Rapid dilatation of stricture.*—In these four cases of stricture dilatation was accomplished by means of Lister's probe pointed graduated bougies. The dilatation was maintained by passing the full-sized instrument (9-12) every third or fourth day. I have found this to be

quite the easiest and most efficient method of treating stricture of the urethra. It is as well to administer chloroform on the first occasion. If 0-3 of the series can be passed, and with patience and care it seldom happens that this cannot be done, the rest is easy. Sometimes the preliminary use of the fine straight bougie-probe facilitates the all important initial step of introducing the 0-3 bougie. In very irritable and tight strictures it is better to stop at .6-9 and continue the dilatation up to 9-12 a few days afterwards.

2. *Aspiration of the bladder.*—This was resorted to by the resident surgeon to relieve urgent retention. The stricture was subsequently treated successfully by rapid dilatation.

3. *Reduction of prolapsus of the rectum.*—Patient, a Hindu male, *æt.* 22, was admitted with an œdematous sloughy prolapse of the rectum, measuring 4 inches in length and 6 inches in circumference, which had descended 10 days previously, and remained unreduced during the whole of that period. The mass was reduced with some difficulty under chloroform, the sloughs separated, and the resulting ulcers healed. No return of the prolapse occurred during the 11 days he remained in hospital, and he has not been heard of since.

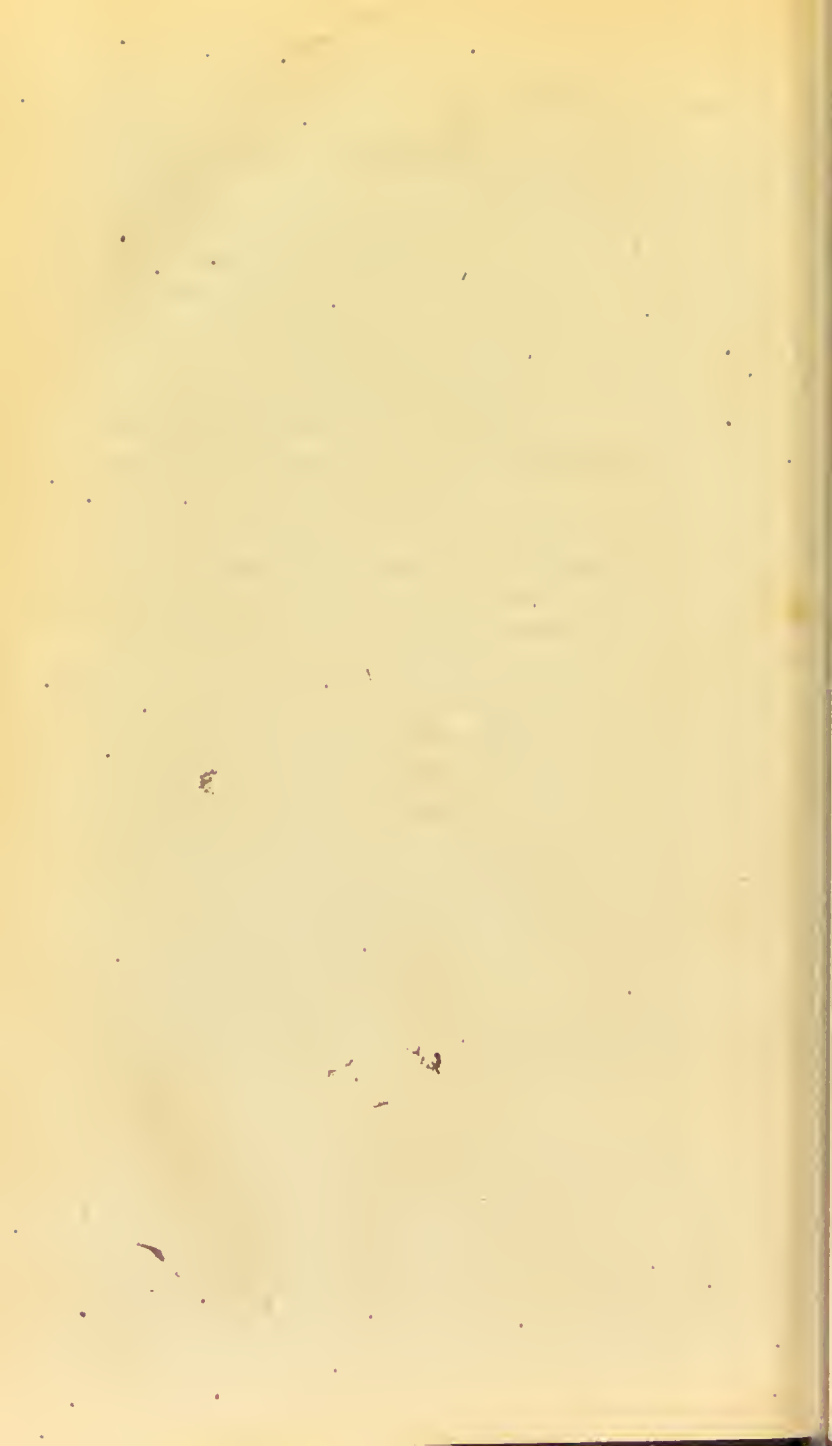
GENERAL REMARKS.

Mortality.—The death-rate for 1889 was unprecedentedly low, namely, 5.85 per cent. of cases treated to the end. On referring to the list of fatal cases, I find that in the majority of them the result was due to conditions existing before

the operation, and for whose removal or cure it was performed in vain.

Eight out of the 14 cases came under this category. In the remainder the "shock" and "exhaustion" indicate a combination of causes of which the operation was one and the last. The most precise and regrettable cause of death was pneumonia in the fatal operation for hernia. No case died of septic causes *per se*, but in the urinary cases, septicity no doubt contributed to death.

Antiseptics and hospitalism. — Bichloride of mercury was used as lotion and dressing almost to the exclusion of every other agent. Boracic acid and iodoform were employed as deep dressings. In some cases mercurial irritation of the skin occurred, but in none were any constitutional effects of mercury observed. The wounds remained sweet and underwent repair kindly in the large majority of cases, and we have now learned to look upon hospitalism in any shape as a rare experience, except, as happens occasionally, when imported from without; for though antiseptic surgery is largely and successfully carried out in private practice, cases occur mostly outside of Calcutta in which the treatment of wounds and injuries has been faulty.



PRÉCIS OF OPERATIONS

PERFORMED IN THE
WARDS OF THE FIRST SURGEON, MEDICAL COLLEGE
HOSPITAL.

During the year 1890.

BY BRIGADE-SURGEON K. McLEOD, A.M., M.D., F.R.C.S.E.,

Professor of Surgery, Calcutta Medical College.

THE following record is the tenth of the series, and is drawn up according to the same classification and arrangement as the preceding nine. These wards were under my charge during the whole year with exception of a short period of leave in October. Some of the operations were performed by the Resident Staff, and the name of the operator is attached to them. My assistant during the whole period was Assistant-Surgeon Syama Nirod Das Gupta, M.B., for whose willing and skilful aid I am greatly indebted, both as regards the practical ward work and the preparation of these records.

Table of Operations performed during 1890.

I. OPERATIONS ON ARTERIES. No. Died.

1. Ligature of internal pudic artery	...	1	0
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II. OPERATIONS ON VEINS.

1. Ligature and excision of varicocoele after exposure by antiseptic incision	...	2	0
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III. OPERATIONS ON JOINTS. No. Died.

1. Reduction of dislocation—

<i>a</i> Hip-joint	...	6	0
<i>b</i> Knee-joint	...	1	0
<i>c</i> Elbow-joint	...	3	0

2. Forcible movement of stiff joints—

<i>a</i> Knee...	...	2	0
<i>b</i> Elbow	...	1	0
<i>c</i> Wrist...	...	2	0
<i>d</i> Temporo-maxillary	1	0	

3. Incision of knee-joint—

<i>a</i> for injury	...	1	0
<i>b</i> for suppuration	...	2	0

4. Erasion of joints—

<i>a</i> Astragalo-scaploid	1	0	
<i>b</i> Calcaneo-cuboid	...	1	0
<i>c</i> Scaphoid-cuneiform	1	0	

6. Excision of elbow-joint ... 5 0

7. Removal of astragalus for dislocation ... 1 0

Total ... 28 0

IV. OPERATIONS ON BONES.

1. Sequestrotomy and erasion ... 22 0

2. Wiring fractured patella ... 1 0

5. Resection of bones—

<i>a</i> femur in conical stump	...	1	0
<i>b</i> humerus for compound fractures	2	0	
<i>c</i> radius for compound fracture	...	2	1
<i>d</i> ribs for empyema	...	2	1

4. Trephining of mastoid process ... 1 0

5. Trephining of skull—

<i>a</i> for recent fracture	...	2	2
<i>b</i> for traumatic epilepsy	...	1	0

Total ... 34 4

V. AMPUTATIONS.

No, Died.

A.—For Injury.

1.	Primary through shoulder joint	...	1	0
2.	„ of arm ...	...	1	0
3.	„ of forearm ...	...	2	0
4.	„ of fingers and toes ...	...	3	0
5.	„ of leg ...	...	2	1
6.	Secondary of arm for gangrene	...	2	0
7.	„ of fingers and toes for necrosis	...	3	0

Total for Injury ... 14 1

B.—For Disease.

1.	Of the thigh for disorganized knee-joint...	2	0
2.	„ for sarcoma ...	1	0
3.	Of the leg for gangrene or necrosis	3	0
4.	Syme's for mycetoma ...	1	0
5.	„ for diseased tarsus ...	3	0
6.	Chopart's for necrosis ...	1	0
7.	Hey's for necrosis ...	1	0
8.	Of toes for gangrene ...	1	0

Total for Disease ... 13 0

GRAND TOTAL OF AMPUTATIONS ... 27 1

VI. REMOVAL OF TUMOURS (BY EXCISION.)

A.—Malignant.

I.	Epithelioma—			
	<i>a</i> of cheek	...	1	0
	<i>b</i> of tongue	...	1	0
	<i>c</i> of penis	...	3	0
	<i>d</i> of scrotum	...	1	0
	<i>e</i> of hip	...	1	0
2.	Scirrhus—			
	<i>a</i> of jaw	...	1	0
	<i>b</i> of neck	...	1	0
3.	Sarcoma—			
	<i>a</i> of antrum	...	1	0
	<i>b</i> of lower jaw	...	1	0
	<i>c</i> of testis	...	1	0
4.	Naso-pharyngeal polypus (by ecraseur and avulsion)	...	2	0
		...		
	Total	...	14	0

B.—Non-Malignant.

		No.	Died.
1.	Elephantiasis—		
	<i>a</i> of prepuce	...	1 0
	<i>b</i> of scrotum	...	24 0
	<i>c</i> of labia	...	2 0
2.	Fibroma—		
	<i>a</i> of upper jaw	...	1 0
	<i>b</i> of lower jaw	...	1 0
	<i>c</i> of ischio-rectal fossa	...	1 0
	<i>d</i> of thigh	...	1 0
	<i>e</i> of leg	...	1 0
3.	Myxoma of nose (avulsion)	...	1 0
4.	Angioma of lip (injection)	...	1 0
	" " (excision)	...	1 0
5.	Adenoma of mamma	...	2 0
6.	Lymphadenoma of axilla	...	1 0
7.	Keloid of shoulder	...	1 0
8.	Exostosis of external meatus	...	1 0
9.	Cyst—		
	<i>a</i> Sebaceous of scalp	...	2 0
	<i>b</i> " of neck	...	1 0
	<i>c</i> " of groin	...	1 0
10.	Condyloma	...	2 0
11.	Gumma	...	1 0
12.	Lupus of nose	...	1 0
13.	Diseased glands—		
	<i>a</i> cervical	...	2 0
	<i>b</i> axillary	...	1 0
	<i>c</i> inguinal	...	14 0
14.	Hæmorrhoids	...	3 0
Total		...	68 0

GRAND TOTAL OF TUMOURS ... 82 0

VII. REMOVAL OF FOREIGN BODIES.

1.	Piece of wood from neck	...	1 0
2.	Stalk of grass from bladder	...	1 0
Total		...	2 0

VIII. REMOVAL OF CALCULI.

No. Died.

1.	Vesical, by litholapaxy	...	...	7	1
2.	„ by lithotomy—				
	<i>a</i> lateral	...	...	4	0
	<i>b</i> Median	...	...	2	0
				<hr/>	
Total			...	13	1
				<hr/>	

IX. INCISIONS.

1.	Laryngo-tracheotomy...	...	...	1	0
2.	Laryngotomy	...	...	1	1
3.	Herniotomy for strangulation (sac opened)...			6	4
4.	Radical cure of hernia—				
	<i>a</i> inguinal	...	...	19	2
	<i>b</i> ventral	...	...	1	1
5.	For imperfectly descended testis			1	0
6.	Laparotomy—				
	<i>a</i> for injury...	...	...	1	1
	<i>b</i> for obstruction	...	...	1	1
7.	Tenotomy—				
	<i>a</i> for contracted hamstrings		...	2	0
	<i>b</i> for talipes equinus	..	...	1	0
	<i>c</i> for talipes equino-varus...		...	4	0
8.	Division of congenital contraction of meatus urinary	...	...	2	0
9.	Internal urethrotomy	...	...	1	0
10.	External urethrotomy—				
	<i>a</i> Cock's	...	...	3	2
	<i>b</i> Syme's	...	...	7	1
	<i>c</i> Wheelhouse's		...	5	1
11.	Incision for imperforate anus	...	..	1	0
12.	„ stricture of anus	...	...	1	0
13.	„ „ of rectum	...	...	2	0
14.	„ recto-vaginal fistula		...	1	0
15.	Scrotal abscesses	...	...	6	0
16.	Abscesses	...	..	24	0
17.	Sinuses	...	...	9	0
				<hr/>	
Total			..	100	14
				<hr/>	

X. REPARATIVE OPERATIONS.			No. Died.	
1.	For ectropion	...	..	2 0
2.	„ closing a gap in the cheek	...	...	2 0
3.	„ restoring perineum	...	...	2 0
4.	„ ulcers on bony prominences	...	...	2 0
Total			...	8 0

XI. OPERATIONS NOT CLASSED.				
1.	Cauterising prolapsed rectum	...	...	3 0
2.	Radical cure of procidentia recti	...	...	1 0
3.	Paracentesis of bladder	...	...	1 0
4.	Erasion of lupus	...	...	3 0
5.	„ of rodent ulcer	...	...	1 0
6.	Continuous dilatation of stricture	...	...	6 0
Total			...	15 0

18 / GRAND TOTAL ... 312 20

Death-rate per cent. ... 6.41

OPERATIONS ON ARTERIES.

I. *Ligature of internal pudic.*—Hindu male, *æt.* 3. Lateral lithotomy was performed on the 27th of July. The stone was successfully extracted with slight loss of blood. On the 31st the wound bled profusely from the left side. Plugging failed to stop the hæmorrhage, and immediate ligature was tried without effect. A loop of catgut was passed round the left internal pudic artery with a curved needle and tied firmly. The hæmorrhage stopped at once, and did not recur. Patient was discharged well on the 12th of August.

OPERATIONS ON VEINS.

i. *Ligature and excision of varicocele after exposure by antiseptic incision.*—East Indian male, *æt.* 21. Varicocele of left cord of four

years' duration. The mass was exposed and ligatured in two places—above the testicle and at the internal ring—and then excised. The wound remained aseptic and healed by first intention in 11 days.

ii. Hindu male, *æ*t. 23. Varicocele of right side of one and a half years' duration. A similar operation was performed. The upper end accidentally escaped out of the catgut loop into the inguinal canal, but was "fished" out by clamp forceps and retied after transfixion. The wound healed by first intention in ten days. A hydrocele on the same side was successfully tapped and injected a few days after.

* * In both these cases a small drainage tube was inserted and retained for a few days. The result of the operation in both cases was highly satisfactory.

III. OPERATIONS ON JOINTS.

1a. *Reduction of dislocation of hip-joint.*—In two of these cases of 3 and 42 days' duration reduction was effected by manipulation under chloroform. The joint was kept at rest for a fortnight, and movement was then resumed. In another case of 36 days' duration extension by pulleys was required and succeeded after manipulation had failed. In another case of seven days' duration the rim of the acetabulum had been broken and the head of the bone escaped out of the cavity as soon as the traction was discontinued. A satisfactory result was obtained by continued extension by means of pulley and weight for a month. The joint was a little stiff but useful. In another case of dorsal dislocation of ten days' standing reduction was effected

by manipulation, but on removing the long splint after 16 days the head of the femur was found to have escaped. A second reduction was effected by manipulation, and after 29 days' rest the joint was found to be in a satisfactory and serviceable state.

1b. *Reduction of knee-joint.*—This was a case of oblique fracture of the head of the right tibia in a Hindu male, *æt.* 40, caused by a fall off a tree. There was well marked dislocation outwards of the tibia and fibula. This was remedied by traction with pulleys, and the limb was kept on a Macintyre splint for a month. The result was satisfactory.

1c. *Reduction of dislocation of elbow-joint.*—i. European male, *æt.* 33. Backward dislocation of radius caused by a fall off a phaeton. Reduced under chloroform by forcible flexion. Good result in 36 days.

ii. Hindu male, *æt.* 18. Backward dislocation of both bones of six weeks' standing. Limb (right) nearly straight. Reduction was effected under chloroform, and by subsequent manipulation a useful joint was obtained. He remained 42 days in hospital.

iii. Hindu male, *æt.* 22. Backward dislocation of both bones of right elbow-joint with fracture of the head of the radius caused by fall off horse back. The limb was nearly straight. By forcible flexion under chloroform partial reduction was effected. Subsequent manipulation was repeatedly resorted to, but mobility could not be permanently restored and excision of the joint became necessary (see case III, 6, *iv infra.*)

2a. Forcible movement of stiff knee-joints.—

In both these cases the joint was fixed in a flexed position and forcibly straightened under chloroform. In one case movement was restored, in the other, the ligamentum patellæ gave way under manipulation, and the limb was treated for ankylosis in a straight instead of angular position.

2b. Forcible movement of stiff elbow-joint.—

The stiffening resulted from arthritis of gonorrhœal origin in a Hindu male of 30. Repeated manipulations under chloroform were required; but eventually a useful range of movement was obtained.

*2c. Forcible movement of stiff wrist-joint and fingers.—*In one of these cases the stiffening was due to compound Colles's fracture, in the other to cellulitis and ulceration induced by tight bandaging. In both cases the joint and tendons were moved in detail under chloroform, and the use of the hand restored.

*2d. Forcible movement of temporo-maxillary joint.—*Hindu male child, æt. 6. Both joints stiffened in consequence of severe parotitis and the condition of atresia established. Movement was restored by repeated application of the screw-gag.

*3a. Incision of knee-joint for injury.—*Hindu male, æt. 35. Struck the inside of the knee with an axe two days ago. Wound sloughy-looking and discharge putrid. The joint has been opened and is inflamed; thigh and leg puffy, temperature 101·8°. Patient was chloroformed, and a free incision was made into the joint above the patella on its inner side. The joint cavity

was thoroughly irrigated with bichloride lotion, and a tube passed through the wound, another across the joint above the patella; antiseptic dressing was applied. Pyrexia subsided in three days. One tube was removed in five days, and the other gradually shortened and removed in 38 days. Wound closed in 43 days. The joint was rather stiff, but useful when he left hospital after a residence of 92 days.

3b. *Incision of knee-joint for suppuration.*—

i. Hindu male, *æt.* 25. His left knee-joint filled with fluid while he was suffering from remittent fever. On exploring, the fluid was found to be purulent. Patient emaciated and suffering from fever, spleen enlarged. The joint was laid open under antiseptic precautions and a drainage tube inserted. The fever subsided and discharge, which was at first copious, gradually diminished. The tube was gradually shortened, and the wound closed in 37 days. Patient discharged after 104 days with a stiff but useful joint.

ii. Hindu male, *æt.* 18. Acute arthritis of left knee-joint of six days' duration. Limb œdematous. Suffering from high fever. Joint greatly distended. Fluid found on exploration to be purulent. A free incision was made under antiseptic precautions and a tube inserted. This was gradually shortened and removed after 33 days; but re-accumulation occurred and re-insertion became necessary. Two counter-openings had to be made on the 68th day, on account of bagging and tubes were inserted. These openings gradually closed, and patient left hospital after a stay of 184 days with a straight stiff-joint.

4a. *Erasion of astragalo-scaphoid joint.*—Hindu male, *æt.* 40. History of syphilis: Admitted with open astragalo-scaphoid joint, the result of inflammation, commencing five months ago. There were three sinuses converging towards the joint. These were laid open, and their walls and the joint cavity thoroughly scraped with a sharp spoon. The cavity was stuffed with borated lint sprinkled with iodoform. The case did well for a few weeks when the foot became painful and puffy. Bare bone was discovered, and amputation performed by Syme's method.

4b. *Erasion of the calcaneo-cuboid joint.*—Native Christian female, *æt.* 25. Sprained her right ankle about a month previously. Inflammation ensued, which resulted in an abscess situated opposite to the calcaneo-cuboid joint. This was laid open. The cuboid was found bare and joint open. The cavity was scraped thoroughly, and the wound healed antiseptically. It did well for ten days, and then swelling, pain and fever recurred, and Syme's amputation was performed. There was also a history of syphilis in this case.

4c. *Erasion of the scaphoid-cuneiform joint.*—East Indian male, *æt.* 21. This patient, who had recently suffered from syphilis, got disease of the calcaneo-cuboid joint, which was treated by erosion in December 1889. The cavity healed kindly, but a small sinus remained. In July 1890, a similar condition was found to exist in the joint between the scaphoid and cuneiform bones. The old sinus was laid open and well scraped, and the diseased joint also laid open by a fresh incision, and the carious tissue removed. The process of repair was very slow, but even-

tually the wounds closed, and patient left hospital in January 1891 with a useful foot.

6. *Excision of the elbow-joint.*—i. Hindu female, *æt.* 50. Admitted with an open left elbow-joint, the result of a puncture made by a barber for suppurative inflammation about six weeks ago. The joint was found to be thoroughly disorganized, and the articular ends of the bones were removed through a straight posterior incision. Repair was somewhat delayed by the sharp edge of the humerus working through the skin. This required a small operation. Eventually an excellent result was obtained. Remained in hospital 78 days.

ii. Armenian male, *æt.* 45. Sustained a wound of left elbow-joint in Burmah six months ago. Firm ankylosis has resulted. The joint was exposed by straight posterior incision, the olecranon process removed, the articular ends forcibly separated and excised. The wound remained aseptic and healed by first intention. Passive motion was resorted to on the 19th day. Discharged with a useful arm in 60 days.

iii. Hindu male, *æt.* 35. Sustained dislocation and fracture of elbow 36 days ago. Joint fixed in a nearly straight position. It was opened by straight incision from behind, and the ends of the bones removed. The external condyle and coronoid process were detached and found embedded in callus. There was troublesome oozing for a week, but the wound remained sweet and healed by first intention. Discharged with a useful arm in 56 days.

iv. Hindu male, *æt.* 22. This was also a backward dislocation of the elbow-joint, in which

an unsuccessful attempt at reduction had been made. [See case III, 1c, iii *supra*.] The ends of the bones were removed as in the last case. The wound healed by first intention, and a satisfactory result was obtained. Spent 69 days in hospital.

v. Hindu male, *æt.* 25. Left elbow-joint fixed in a nearly straight position in consequence of gonorrhœal arthritis. Movement had been restored by manipulation three months ago, but only for a time. The joint was excised in the usual manner. The wound healed by first intention, and a satisfactory result was obtained in 31 days.

7. *Removal of the astragalus for dislocation.*—Hindu male, *æt.* 53. Sustained outward dislocation of right ankle-joint two months ago. Foot extremely inverted, and the limb is quite useless for support or progression. The left lower extremity useless from congenital atrophy. The astragalus was exposed by a T-shaped incision and removed in two portions. The dislocation was reduced and the wound treated for aseptic closure by granulation. This took place in 31 days. The patient left hospital in 61 days with a serviceable limb.

IV. OPERATIONS ON BONES.

1. *Sequestrotomy and erosion.*—The twenty-two cases included under this head present a considerable variation in respect of causation and degree of bone disease; but they were treated on precisely the same principles, namely, free exposure of the site of disease by incision and thorough removal of diseased and dead tissue (hard and soft) by forceps, chisel, gouge, sharp

spoon and osteotrite. Antiseptic measures were invariably employed, in some cases preventively when the skin remained whole, but in most cases correctively when sinuses led to the cavity containing the dead or carious bone. Several of the cases were due to injury recent or remote; and in some of the latter constitutional conditions accentuated or perpetuated the mischief caused by the noxa. Some were the result of broken-down gummata, strumous or syphilitic. But in many cases the bone death was due to acute inflammatory processes untreated or aggravated by maltreatment and unrest. In one such case neglected abscess of the scalp in a Hindu lad of 19 led to extensive necrosis of the skull. Notwithstanding free opening and removal of loose fragments of dead bone, paralysis and epileptiform fits supervened, and the patient was removed in a moribund state. In another case acute abscess of the cheek causing alveolar necrosis was due to the eruption of a wisdom tooth in a lad of 18. Cases of atresia oris caused by inflammatory changes in the soft parts set up by the lower wisdom teeth in process of eruption are not uncommon in India. Extraction of the wisdom tooth or of the second molar is generally necessary, and division of the cicatricial band with subsequent use of the screw-gag. The great majority of the cases responded satisfactorily to the measures employed, but in some cases very slowly; while in others repeated operations were necessary. In all cases constitutional remedies were resorted to when they appeared to be advisable or necessary.

2. *Wiring fractured patella.* — Mahomedan

male, *æt.* 35. Sustained an injury of right knee-joint 17 months ago. The joint was laid open, and patella severed in two by the tusk of a wild boar. The wound healed in six months, leaving the fragments of the patella far apart, and the joint in a stiff and semiflexed position. The joint can now be flexed, but not extended beyond an angle of 120° . The limb is almost useless. The hamstring tendons were first divided subcutaneously, and the limb straightened on a Macintyre splint, and seven days afterwards, the part continuing weak, a return of flexion threatening owing to the absence of extensor power, the following operation was performed. The fragments were exposed by a longitudinal incision.

They were about three inches apart, the upper large and firmly fixed to the trochlear surface of the femur, the lower small and sunk into the intercondyloid notch. Some cicatricial tissue was removed from between them, their opposed surfaces freshened by the chisel and the upper loosened from its adhesions to the femur. It was now found that approximation of the fragments was impossible. The incision was accordingly prolonged upwards, and the quadriceps extensor divided by a W-shaped incision after the manner of Lister. The fragments then came together, and were drilled and wired. The tips of the W were united by catgut. Lateral openings were made for drainage, and the wound put up antiseptically. The wound remained aseptic, and healing took place without local or constitutional disturbance. The tubes were gradually shortened, and finally withdrawn on the 16th and 20th day. The limb was put

up in gum and chalk after the wounds had quite healed, and patient was allowed to get about on crutches. He was discharged 109 days after operation. The joint was free of swelling and pain; he could walk with comfort. No movement existed at the knee-joint, which was ankylosed in a nearly straight position. Bony union had taken place between the fragments. The wires remained *in situ* and caused no irritation.

3a. *Resection of femur for conical stump.*—Hindu male, *æt.* 30. This was a phthisical patient who had undergone amputation at the middle of the thigh for disorganized knee-joint and abscesses. The healing process was very slow and feeble, and the soft parts fell away from the bone which protruded out of the centre of the wound. Forty-two days after the amputation a straight incision was made over the bone, and the protruding portion sawn off. This wound healed slowly by granulation, and the patient left hospital two months after the last operation.

3b. *Resection of the humerus for compound fracture.*—One of these cases was recent in a Hindu male child of 8. The lower end of the upper fragment protruded, and had to be sawn off. Sound union of the fracture took place in 84 days. In the other case, a Hindu male child of 7, an epiphysial simple fracture of the lower end of the humerus had taken place three months before admission. The end of the shaft had been pushed in front of the epiphysis and union has taken place in that position, seriously impeding flexion of the joint. The projecting

bone was reached by straight incision, removed by cutting forceps, trimmed by chisel, reduced and retained in position by a rectangular splint. The wound healed in 11 days, and the child was discharged with a useful joint in 27 days.

3c. *Resection of the radius for compound fracture.*—(i) Hindu male, *æt.* 13. Fell from a tree two days ago and sustained compound Colles's fracture; lower end of upper fragment protruding through the skin. The protruding portion was removed by cutting forceps, and the bone was reduced after the wound had been enlarged. The wound healed very slowly, and a small bit of dead bone was removed through a sinus which remained obstinately open. It closed speedily after this. Passive motion was repeatedly resorted to. The child remained under treatment for 145 days. Ultimate result satisfactory. (ii) Hindu male, *æt.* 14. Sustained compound fracture of both bones of the forearm by fall from a height of 24 feet three days before admission, radius protruding, discharge foetid. The projecting portion of the radius was removed by cutting forceps and the bone reduced. A large collection of matter was found on the flexor aspect of the forearm four days afterwards and laid freely open. Pyrexia set in on the fifth day and tetanus on the sixth, which proved fatal next day.

4d. *Resection of the ribs for empyema.*—(i.) Hindu female, *æt.* 30. This patient had been suffering from acute pleurisy of left side for several weeks. She was admitted under the care of Dr. Birch on 19th August. Respiration being very embarrassed and circulation

very rapid. 62 ozs. of blood-tinged serum were removed by aspiration on that day. This gave some relief; 28 ozs. were removed on the 21st, and 13 ozs. on the 27th. Re-accumulation taking place somewhat rapidly. Dr. Birch thought that diminution of the capacity of the chest would probably favour collapse after evacuation. Accordingly on the 2nd of September, pieces about $1\frac{1}{2}$ inches long were taken out of the 5th, 6th, and 7th ribs in the line of the axilla. In denuding the 6th rib the pleura which seemed to be friable gave way. A drainage tube was inserted through this hole, and an antiseptic dressing applied. Patient suffered from shock after the operation, and did not rally. Death took place in $52\frac{1}{2}$ hours. Free discharge took place through the tube.

(ii.) East Indian child, *æt.* 9. This boy was admitted for empyema of two months' standing. A piece of the 6th rib was removed, so as to facilitate insertion and retention of a tube. Fever subsided after the operation; the discharge became scanty; the tube was gradually shortened, and withdrawn when the discharge became serous and scanty. The wound healed, and patient was discharged 26 days after operation.

4. *Trephining of the mastoid process.*—Hindu male, *æt.* 50. Has been suffering from disease of right ear for a year. There is a sinus in the posterior wall of the meatus, through which a probe passes and impinges on loose dead bone; discharge very offensive. Mastoid process enlarged and soft tissues over it puffy. A straight incision was made behind the ear;

the mastoid process was laid open and a cavity exposed full of dead and carious bone, and very friable granulation tissue. This was fully scraped out, and the cavity healed slowly by granulation in 105 days.

5a. *Trephining the skull for recent fracture.*—(i.) East Indian male, *æt.* 28. Sustained a wound of right temple four days before admission. Skull broken at site of wound, which had not been treated antiseptically. Has high fever; loss of control over left upper extremity and stiffness of neck. During two days after his admission the symptoms became worse. He got semicomatose, pupils contracted, pulse and respiration quick. Both legs stiff. Passes motions involuntarily. The skull was trephined at the seat of fracture. No fragments. *Dura mater* dull and yellow at one spot where it was divided. A few drops of pus issued. Membranes very vascular. He lived for 22 hours. The symptoms progressed and he died of coma. Acute diffuse purulent meningitis was found on *post mortem* examination.

(ii.) Hindu male, *æt.* 22. Fell off a coach-box $2\frac{3}{4}$ hours before admission. Sustained a wound of left occipital region and a depressed fracture of skull beneath the wound; breathing irregular, p. 140. Conjunctival reflex absent. Three hours after admission violent spasms of right upper and lower extremities set in. $5\frac{1}{2}$ hours after this, his condition getting worse, Dr. Adie exposed the seat of fracture, trephined the skull, and removed several pieces of bone which were pressing on the brain. No relief followed except that the breathing got more

regular and spasms ceased. Died 26 hours after operation.

5b. *Trephining for traumatic epilepsy.*—East Indian male, *æt.* 24. Admitted 1st December. Fell off a dog-cart in March 1887, and was stunned. Hurt the upper occipital region where there was a swelling, on whose subsidence a depression was perceived. Got an epileptic fit about a month after the accident, and since then fits have occurred at irregular intervals with increasing frequency of late. On admission, a depression was found at the upper angle of the occipital bone which was somewhat tender on pressure. A circle of bone was taken out of the skull at this place by the trephine under strict antiseptic precautions. A thickened ridge was found to extend across the inner plate. The operation was performed on the 6th of December. The wound healed shortly by first intention; no constitutional disturbance. He had a fit on the 29th. The cavity of the wound was found to be distended with clear serum which was evacuated and a small tube inserted. Another slight fit occurred on 17th January. Discharged in excellent health on 7th February. He had two slight fits shortly after discharge; but when last heard of had been free of fits for three months and was in perfect health, doing his work as a clerk in a Government Office at Simla very efficiently.

AMPUTATIONS FOR INJURY.

1. *Primary amputation through the shoulder-joint.*—Hindu male, *æt.* 25. Mill accident. Right arm and forearm caught by belting, latter torn

off. Humerus denuded and soft parts lacerated, more on posterior and outer aspect. Amputation was performed soon after his admission on the day of accident through the shoulder-joint. An external (deltoidal) flap was formed by dissection, disarticulation effected, and an internal (axillary) flap cut from within. Hæmorrhage was prevented by a cord held by tapes in front and behind. The operation was followed by shock, which was succeeded by moderate reaction. The wound remained aseptic, and healed by first intention in 18 days. Discharged 46 days after admission.

2. *Primary amputation of arm.*—Mahomedan male, *æt.* 50. Left hand and lower third of forearm torn off by a machine. Flaps were taken from what remained of the skin of forearm, and the humerus was divided above the condyles. The operation was performed shortly after admission on the day of accident by Surgeon Edwards. The wound healed by first intention in 16 days, and patient was discharged in 25 days.

3. *Primary amputation of forearm.*—(i) Mahomedan male, *æt.* 20. Right hand and wrist crushed by a machine. Amputation of forearm at lower third performed by the Resident Surgeon on admission. Wound healed by first intention in 11 days. Patient discharged in 19 days.

(ii) Mahomedan female, *æt.* 55. Sustained a compound Colles's fracture and extensive laceration of wrist by the passing of a carriage-wheel over it. Amputation of the forearm at the lower third was performed by Dr. Adie on her admission. The wound healed by first intention in 11 days, and patient left hospital in 13 days.

4. *Primary amputation of fingers.*—In one of these cases, a Hindu lad of 20, all the fingers of the right hand were smashed, the metacarpals broken, and the skin of the dorsum badly torn. Surgeon Jameson removed the four fingers and metacarpal bones, and raised a palmar flap over the ends. A satisfactory result was obtained in 27 days. In another Hindu youth of 12, Dr. Adie removed all the fingers of the left hand, which had been damaged badly by a machine, together with the heads of the metacarpal bones, utilizing the tags of skin which retained vitality for flaps. The case did well in 35 days. In the third case, a Hindu male, *æt.* 45, the 2nd, 3rd, and 4th digits of the left hand had been smashed three days before admission, and gangrene had set in. Dr. Gibbons removed them at the metacarpo-phalangeal joint, and recovery took place in 27 days.

5. *Double primary amputation of the legs.*—A Hindu male, *æt.* 50, was run over by an engine and had the right leg crushed at the upper third, and the left foot and ankle badly smashed. Surgeon H. W. Pilgrim removed the right leg at the upper third and the left at the lower third. The patient died of shock 20 minutes after completion of the operation.

6. *Secondary amputation of the arm for gangrene.*—(i) A Mohamedan male, *æt.* 12, fell from a tree about a month ago, and hurt his left forearm. Splints and bandages were applied by a villager in such a way that the part swelled and became gangrenous. The soft parts gradually separated from the lower two-thirds of the forearm, leaving the bones bare and the hand

fell off. He was admitted in this condition with a conical granulating wound at the upper third. Sufficient skin remained to permit of amputation by oval flaps just above the elbow joint. The wound healed in 16 days, and he was discharged with a sound stump in 20 days.

(ii) A native Christian female child, *æt.* 8, fell off a verandah about a month before admission, and hurt her right forearm; the part was bandaged, and subsequently swelled and suppurated. An opening had been made to evacuate the matter. The forearm and lower third of the arm were found to be baggy and fluctuating. Counter openings were made, and tubes inserted, and an effort made to save the limb. No benefit resulted. The child suffered from fever, and the bones of the arm and forearm were found to be extensively denuded, and the elbow-joint disorganized. Amputation of the arm at the lower third was performed by Assistant-Surgeon Syama Nirod Das Gupta. The fever quickly subsided, and the wound healed in 16 days.

7. *Secondary amputation of fingers for necrosis.*—(i) Hindu female, *æt.* 50. The ring and little fingers of the right hand were crushed by a *dhenki* 25 days ago, and have dropped off at the first inter-phalangeal joint. The first phalanges were removed by Assistant-Surgeon S. N. Gupta. The wounds healed by granulation in 32 days.

(ii) Hindu male, *æt.* 30. The middle finger of right hand was smashed about a month ago. What remained of the digit was removed at the metacarpo-phalangeal joint. The wound healed in 10 days.

(iii) Mahomedan male, *æt.* 50. This man's left index finger was bitten by a drunkard a fortnight ago. The finger was swollen, boggy and riddled with sinuses, and the bones necrosed. It was removed together with the head of the metacarpal bone. A lot of unhealthy granulation material was scraped off by a sharp spoon, and the wound left to heal by granulation which occupied 29 days.

* * * The most remarkable features in the foregoing series of cases is the number of accidents requiring amputation, which were caused by machinery. A quarter of a century ago injuries of this sort were all but unknown in India. As mills and factories have arisen in and around Calcutta, machine accidents have been met with with increasing frequency, and they are likely to undergo still further increase in the near future. Two of these cases illustrate the damage caused by rough village surgery, of which very frequent examples present themselves in the Calcutta hospitals.

AMPUTATIONS FOR DISEASE.

1. *Amputation through the thigh for disorganized knee-joint.*—(i) Hindu female, *æt.* 12, admitted on 19th September 1889, with a sinus on the outer aspect of left thigh leading to bare bone caused by an abscess which occurred four months previously; knee-joint ankylosed in a semi-flexed position. An attempt was made to save the limb by drainage, rest and constitutional treatment. A sequestrum was removed on 7th October, and the case seemed to be progressing favourably, till the beginning of January 1890

when a large abscess formed on the opposite (inner) aspect of the thigh. When this was opened, the femur was found to be extensively denuded and the knee-joint disorganized. The general health was also failing. Amputation was performed on the 18th of January through the middle of the thigh. The wound healed rapidly, and patient's health greatly improved. She left hospital with an artificial leg on the 16th of March.

(ii) Hindu male, *æt.* 30, suffered from inflammation of the larger joints about a year ago. They all recovered with exception of the left knee-joint, which has continued painful and swollen. On admission this joint was found to be distended with pus, dislocated backwards and thoroughly disorganized; a large abscess extended into the thigh; patient's health bad, suffering from pyrexia and phthisical. Amputation was performed by lateral flaps at the middle of the thigh. The wound remained aseptic but repair was very slow and a piece of protruding femur had to be removed 42 days after operation. He left the hospital of his own accord with rapidly progressing phthisis 104 days after operation.

2. *Amputation through the thigh for sarcoma.*—Hindu male. The tumour was situated in the upper end of the left tibia. It appeared to be due to a fall sustained $2\frac{1}{2}$ years previously, and had been growing rapidly during six months prior to admission. Amputation was performed at the lower third of the thigh. The wound healed in 12 days and the drainage track closed 10 days later. A few days afterwards a lump was detected in the recently cic-

trized wound, which continued to increase until patient left hospital 46 days after operation. He was told to return if the lump grew larger; but has not been heard of since his discharge.

3. (i.) *Amputation through the leg for elephantiasis, abscess, and necrosis.*—East Indian female, *æ*t. 17. Has had elephantiasis of left leg for six years. Abscesses formed at the ankle and foot causing ragged sinuses leading to diseased bone. Patient's health and constitution deteriorating, in consequence of the local disease. Amputation of the leg was performed at the seat of election; the flaps united in 16 days, and the drainage opening closed in 11 days more. Discharged 64 days after operation. She was subsequently re-admitted into the medical wards for phthisis, but the stump remained sound.

(ii) *Amputation through the leg for gangrene.*—Hindu male, *æ*t. 30. Had a severe attack of fever seven months ago, followed by gangrene of left foot and lower part of leg. There is a conical stump with the bare tibia and fibula projecting from the apex and knee acutely flexed. Amputation was performed at the seat of election. The flaps united in 12 days, and the drainage aperture healed in 14 days. Discharged with a wooden leg in 59 days.

(iii) *Amputation through the leg for dry gangrene.*—Mahomedan male, *æ*t. 30. This man was admitted on the 15th of August, with gangrene of right foot, the result of an accidental knock against a brick while walking two months previously. Three of the toes had fallen off, and the other two were gangrenous. The first and second metatarsal bones were exposed,

soft parts sloughy. Patient in bad health, suffering from chronic Bright's disease. The sloughs having been removed and ulcer cleaned by the use of salol, the first and second metatarsal bones were removed, and the ends of the others together with what remained of the last two toes on the 22nd September. This proceeding gave a new start to the gangrene, which now invaded the lower part of the leg. Amputation was performed at the seat of election on the 4th of October under strict antiseptic precautions. The wound did well for a week, and then fever set in with local pain, and the discharge became grumous and sour. The wound gaped, and the end of the bone was exposed. This unhealthy action continued for a few days, but the wound finally granulated, and was soundly healed on the 26th of December, 83 days after operation. His health at the same time underwent improvement, and he left hospital with an artificial leg on the 4th of January 1891.

4. *Syme's amputation for mycetoma.*—Hindu male, *æt.* 30. Disease of two years' duration affecting toes and dorsum of left foot. Amputation performed by Syme's method. The case did well during the first week, but putrefaction and bleeding were observed on the eighth day. This was probably due to the man's restlessness. The wound now got very foul, and the cavity of the stump was tensely filled with blood clot. The stitches were removed, clots turned out, and two points tied. Carbolic irrigation was resorted to, bleeding in severe form recurred on two occasions, and was stopped by acupressure; ligatures would not hold. At last under

the local use of turpentine oozing ceased, and the wound became healthy. A sound stump resulted, but detention in hospital extended to 78 days—73 after operation.

5. *Syme's amputation for diseased tarsus.*—

(i) Native Christian female, *æ*t. 25. An attempt was made to save the foot in this case by scraping out the diseased parts (see III, 4, *b*, *supra*.) The tarsus was explored under chloroform, and found to be extensively disorganized. The foot was removed by Syme's method. The wound had to be re-opened on the sixth day to remove clots. It healed by granulation in 60 days. A good stump resulted.

(ii) Hindu male, *æ*t. 30. The disease commenced a year ago, and became extensive, numerous sinuses leading to dead bone. The right foot was removed by Syme's method. An opening for drainage was made in the centre of the heel flap. The lips of the wound healed quickly, but the cavity and drainage track did not close for 49 days. The result was eventually satisfactory. Spent 77 days in hospital.

(iii) Hindu male, *æ*t. 40. An attempt had been made to save this foot (see III, 4, *a*, *supra*). This failing, it was found necessary to remove the foot by Syme's amputation. The skin edges united in 13 days. The drainage aperture in the heel had not quite closed when patient, who suffered from phthisis, was removed by his friends about two months after the operation.

6. *Chopart's amputation for necrosis.*—Hindu male, *æ*t. 30. Sustained an injury of right great toe ten years ago, which resulted in gangrene, which led to the loss of his toes. Two years

afterwards the stump inflamed, and it was found necessary to remove the metatarsal bones. The wound now healed, leaving a sinus in its centre, which has remained open. On admission, the sinns was found to lead to dead bone. It was surrounded by tough cicatricial material, which covered the top of the foot as high as the ankle. A flap was dissected from the sole. The cuboid, three cuneiform bones, and scaphoid, all of which were diseased were taken away, and the flap turned up and stitched. Unhealthy action set in on the fourth day, which caused the flap partially to slough; what remained if it was supported by plaster; and as the wound healed by granulation, it covered the face of the stump, except in front of the ankle when a small ulcer remained, which had to be closed by a plastic operation. The man was admitted on the 11th of January, the amputation was performed on the 18th of that month, and the plastic operation on the 13th of December. This long detention was due to the very tardy repair which took place.

7. *Hey's amputation for necrosis.*—Hindu male, *æt.* 30. Has suffered from disease of the right foot for two-and-a-half years. The anterior portion of the foot is riddled with sinuses leading to dead bone. Oval flaps were dissected from the dorsum and sole of the foot, and the metatarsal bones removed. The wound healed mostly by first intention. The Tendo achillis was divided subcutaneously at the time of operation to prevent pulling up of the heel. A satisfactory result was obtained in 60 days.

8. *Amputation of left great toe for gangrene.*—Hindu male, *æt.* 26. Suffered from

syphilis four months ago. Has still some dusky spots on skin. About thirty-five days ago great toe of left foot became discoloured, and part of it including the terminal phalanx dropped off. The remaining phalanx was removed, and the wound healed by granulation in 43 days.

* * * The reduced mortality of amputations constitutes one of the most satisfactory incidents in the surgical history of the Medical College Hospital. At one time the deaths amounted to about two-thirds of the operations. The death-rate in 1890 was almost nil. The case in which double amputation of the legs was performed, which constituted the only fatal case in the series, was moribund from shock and loss of blood on admission, and never rallied. No selection of cases was made, and in some of those operated on for disease, the constitutional conditions were exceedingly unfavourable from phthisis and syphilis and general debility.

VI. A.—REMOVAL OF MALIGNANT TUMOURS.

1a. *Epithelioma of cheek*.—Hindu male, æt. 32. Sixteen months ago noticed a small hard growth in front of left ear, which has increased to the size of a hen's egg. It is hard and painful to touch, movable but not freely, and there is an opening below the lobule of the ear through which on pressing the lump some glairy fluid exudes. The tumour was exposed by a **⊥**-shaped incision, the horizontal line being parallel to the lower border of the jaw and the vertical running up in front of the ear. The flaps were dissected off, and the tumour removed from its deep connections. It was firmly adherent to the angle of

the jaw which was detached with a chisel. The wound healed mostly by granulation in 58 days. He came to show himself five months after discharge. No recurrence had taken place.

1b. *Epithelioma of the tongue.* — European male, *æt.* 51, admitted on the 7th December. The disease appeared in January. It involves the base of the tongue right side. Anterior pillar of that side thickened. Submaxillary and submastoid lymphatic glands enlarged. The tongue was removed by Kocher's method on the 10th of December. Tracheotomy was performed, a tube inserted, and chloroform administered through it. Oblique incisions were made from the mastoid process, and symphysis in the course of the sterno-mastoid muscle and anterior belly of the digastric down to the level of the hyoid bone and connected by a horizontal cut at that level. The quadrangular flap so fashioned was dissected up and the enlarged glands lying on the carotid sheath exposed. These were carefully dissected off the sheath and removed. The superior thyroid, lingual and facial arteries were seen as they branched from the external carotid and ligatured with catgut. The glands, salivary and lymphatic, in the submaxillary triangle were next removed, and the floor of the mouth opened. The tongue was drawn out through the opening, two strong silk ligatures were passed through its tip and the organ bisected with scissors from tip to base. The right half of the tongue was now removed together with the anterior pillar of the fauces and tonsil of that side. It was now found that the thickening had crossed the middle line, and a chain ecraseur was passed round the

left half of the tongue at its root and the part thus removed. Rather free bleeding took place from the left lingual, which was stopped by re-application of the ecraseur and catgut ligature. Some glands which had escaped notice were now removed, the vertical portions of the wound stitched and the horizontal left open. The exposed parts were dressed with iodoform lint. Patient made a slow but satisfactory recovery. He was fed for weeks with a funnel and tube. The tracheal tube was removed on the 13th day and the tracheal wound closed on the 21st day. The wound of the mouth and neck healed slowly by granulation. On the 4th of February a suspicious nodule was removed from the right anterior pillar. On the 11th of March a cancerous nodule was taken away from beneath the sterno-mastoid. It was adherent to the internal jugular vein, about two inches of which had to be excised after preliminary deligation. The wound now closed with exception of a narrow fistulous channel. He could feed himself with a spoon in a recumbent position. He was able to talk fluently and intelligibly, and his general health was restored. He left for Darjeeling in April. A suspicious hardness had again formed under the sterno-mastoid. He has not been heard of since.

* * This was a very formidable operation ;
* * but by no other method could the obviously diseased tissues have been removed. The disease had unfortunately been allowed to extend so widely and deeply that it is feared that even the extensive and repeated operations which were resorted to have only served to relieve his pain

and suffering and prolong his life for a few months.

1c. *Epithelioma of the penis—amputation.*—

i. Hindu male, *æ*t. 45. Duration four months; glands and prepuce destroyed. Corpus cavernosum infiltrated up to suspensary ligament. Penis transfixed transversely at root by a steel pin and a drainage tube wound round it above the pin. Skin divided circularly. Corpus spongiosum left longer than cavernosa and carefully stitched to inferior angle of wound; vessels secured and sides of cavernosa stitched to septum with two catgut sutures. Wound healed in 17 days.

ii. Hindu male, *æ*t. 45. Disease of 15 years' duration; penis affected to the level of the scrotum. Glands of left groin also cancerous. Similar operation. Glands removed at the same time. Discharged in 53 days with wound fully healed and no recurrence.

iii. Hindu male, *æ*t. 40. Two years' duration. Two-thirds of pendent portion of penis affected. Similar operation. Wound healed in 18 days.

1d. *Epithelioma of the scrotum.*—Hindu male, *æ*t. 53. Originated in a warty growth four years ago, which was repeatedly ligatured with horse-hair and treated with ointments. The mass was removed by an elliptical incision placed well beyond its margin. The resulting wound healed in 26 days.

1e. *Epithelioma of hip.*—Hindu female, *æ*t. 50. She noticed a growth in front of the left trochanter and below the crest of the ilium six months ago, which broke down and formed an ulcer with very hard base. The subjacent bone was eroded. The growth was removed by an elliptical inci-

sion and the subjacent bone freely chiselled out. The resulting wound was large and deep, and took 65 days to heal. There was no sign of recurrence when she left hospital.

2a. *Scirrhus of the lower jaw*.—Mahomedan male, *æt.* 55. Seven years ago he noticed a lump at the left angle of his lower jaw which has gradually attained a large size and grown into the mouth; skin healthy. The lower jaw was divided to the left of the symphysis. An incision made downwards and outwards from the angle of the month, the tumour carefully dissected out and the jaw removed by disarticulation. The case progressed favourably and complete repair procured in 60 days.

2b. *Scirrhus of the neck*.—Hindu male, *æt.* 50, hard growth beneath left sterno-mastoid of two and a half months' duration and implicating the skin, freely movable over the spine and not attached to the larynx or pharynx. It was exposed by an elliptical incision which included the diseased skin. The deep dissection was very difficult and tedious. The internal jugular vein was found to run through the growth and had to be removed with it after ligature above and below; the carotid artery and vagus were exposed but not involved. The wound was carefully closed and healed by first intention. There was no sign of recurrence when the man left the hospital 37 days after the operation.

3a. *Sarcoma of the antrum*.—Hindu male, *æt.* 50. Noticed a swelling of the right cheek four months ago, which gradually increased and burst through the skin about a month ago, causing a circular aperture through which a quan-

tity of gelatinous mucus continually escapes. Cavity of antrum enlarged and walls thinned. A free crucial incision was made, the antrum was found to be filled with cerebriform material which was removed. The thickened lining membrane was peeled off and the bony walls well scraped. The cavity was stuffed with iodoform lint. It was gradually filled by granulation material, the wound closed, and there was no sign of recurrence when he left the hospital 44 days after operation.

3b. *Sarcoma of the lower jaw.*—Hindu male, *æt.* 16. This growth commenced two and a half months ago in the alveolar process of the right lower jaw near the anterior molar and has rapidly assumed a large size. It bulges into the mouth and fances, implicates the skin of the cheek and can be felt as high as the zygoma. Patient anæmic and delicate. A straight cut about two inches long was made from the right angle of the mouth outwards, and from its end two cuts were carried up and down, and from their extremities two others meeting in front of the ear. The quadrangular space thus mapped out included the diseased skin. The jaw was now divided on the right of the symphysis, the tumour isolated and disarticulation effected. Bleeding points were secured promptly by clamp forceps and afterwards tied in detail. The loss of blood was moderate, and the patient bore the formidable operation well. The horizontal cut was carefully stitched and united by first intention; the four sides of the wound were brought together except at the centre where a quadrangular hole was left for drainage. This gaped a good deal

and then contracted, but an aperture remained which required a plastic operation. The operation was performed on the 24th of November and the plastic operation on the 28th of January 1891. Patient had slight shock and was fed through the nostril for two days. The process of healing by granulation was slow but unimpeded.

4. *Naso-pharyngeal polypus*.—i. Mahomedan male, *æ*t. 14. Has suffered from epistaxis for five years. The growth in the pharynx was noticed two years ago. Both nostrils blocked and both respiration and deglutition are accomplished with great difficulty. The growth is found to fill the left nasal fossa and hangs into the pharynx. The left nostril was slit up, a silk thread passed into the mouth with a Bellocq's canula and the chain of an ecraseur pulled into the pharynx. It was slipped round the fundus of the growth with the fingers and about half of the mass was removed. The other half was taken away by a second application of the ecraseur and the attachment of the tumour was pulled away by necrosis forceps. The cavity was lightly stuffed with strips of iodoform lint, and the wound of the nostril carefully stitched. He left hospital in 6 days in a satisfactory condition.

ii. Hindu male, *æ*t. 50. About a year ago he noticed a growth in the right nostril. It was removed about six months ago by Dr. Adie, who slit up the nostril for the purpose. Recurrence has taken place, and the nostril is filled with a soft solid, while the bridge of the nose is raised into a swelling about the size of a walnut. The

nostril was again slit and the tumour encircled by an incision. The septum of the nose, nasal bones and nasal process of the right superior maxillary to which the growth was attached were taken away and the mass extirpated with the aid of a gouge. The nostril was stitched, but the circular aperture in the bridge left open. The wound of the nostril healed by first intention and the circular wound contracted, but recurrence took place in about a month, and patient declined further operation. The growth was a round celled sarcoma.

VI. B.—NON-MALIGNANT TUMOURS.

1a. *Elephantiasis of the Prepuce*.—Hindu male, *æt.* 30. Disease of two years' duration. The hypertrophied prepuce was pulled forwards, the preputial cavity entered by scissors from below and the removal of the mass completed by clipping forwards on each side at the level of the corona glandis. The skin and mucous membrane were stitched together with horse-hair. The wound healed by first intention in 14 days.

1b. *Elephantiasis of the scrotum*.—i. Hindu male, *æt.* 32. Uncomplicated case of seven years' duration. Health good. The tumour which weighed 14lbs., was removed by Assistant Surgeon Syama Nirod Das Gupta in the usual manner. Both tunicae contained fluid, and the membrane which had become cartilaginous had to be dissected and scraped off the surface of the testes. Made a satisfactory recovery in 66 days.

ii. Mahomedan male, *æt.* 55. Uncomplicated

case of twelve years' duration; health good. Usual operation. Tumour weighed 7lbs. 8oz. Right tunica contained a little fluid. Wound remained aseptic and healed in 53 days.

iii. Hindu male, *æt.* 45. Uncomplicated. Five years' duration. Health good. Usual operation; weighed 15lbs. Made a good recovery in 56 days.

iv. Hindu male, *æt.* 32. Uncomplicated. Ten years' duration. Health good. Removed by Assistant Surgeon Syama Nirod Das Gupta in the usual manner. Weighed 10lbs. Right tunica contained some fluid. Wound remained aseptic. Discharged in 65 days.

v. Hindu male, *æt.* 34. Small tumour, weighing 3lbs., of nine years' duration. Health fair. Removed in the usual manner. Both tunicæ contained fluid. Left, thick and degenerated, had to be removed. Wound remained aseptic, but healed slowly. Discharged in 96 days after operation.

vi. Hindu male, *æt.* 32. Small tumour, weighing 4lbs., of three years' growth. Health good. Usual operation. Both tunicæ contained a little fluid. An operculum cut in each. Discharged in 42 days.

vii. Hindu male, *æt.* 28. Large right hydrocele covered with hypertrophied scrotum. Latter only removed, weighed 1lb. 4 $\frac{1}{4}$ oz.; penis not decorticated, tunica excised, testes pocketed, and wound carefully stitched. Healed kindly in 42 days.

viii. Hindu male, *æt.* 40. Uncomplicated. Tumour weighing 7lbs., of three years' duration. Health good. Removed by Assistant Surgeon

Syama Nirod Das Gupta. Wound healed aseptically in 79 days.

ix. Hindu male, *æ*t. 35. Large preputial and small scrotal tumour of ten years' growth. Penis 15 inches long and 10 inches in circumference. Health fair. The hypertrophied parts, weighing 3lbs., were removed in the usual way. The man became demented during convalescence, but recovered before discharge which took place in 84 days.

x. Mahomedan male, *æ*t. 30. Tumour weighing 12lbs., of three years' growth. Health good. Usual operation. Right tunica contained a large quantity of fluid. Recovered in 64 days.

xi. Mahomedan male, *æ*t. 35. Admitted with a scrotal tumour of fifteen years' growth and an inflamed hydrocele. Penis not diseased. The inflammation subsided under treatment in a few days, and the hypertrophied scrotum which weighed 5lbs. 7oz. was removed. Both tunicæ contained fluid, left sanguineous. Penis not decorticated, became œdematous after operation, but regained normal size. Parts healed aseptically in 53 days.

xii. Hindu male, *æ*t. 50. Scrotal tumour and left hydrocele of seven years' duration. Penis healthy. Operation as in last case. Weighed 4lbs. Recovered in 44 days.

xiii. Hindu male, *æ*t. 45. Uncomplicated. Tumour weighing 19lbs., of three years' growth. Health good. Usual operation. Recovery in 54 days.

xiv. Hindu male, *æ*t. 30. Large left hydrocele containing 2½lbs. of fluid, and scrotal tumour weighing 4lbs. Tumour removed, and

tunica paired off by Assistant Surgeon Syama Nirod Das Gupta. Wound healed in 61 days.

xv. Hindu male, *æt.* 24. Small tumour of two months' growth weighing 1½lbs. Usual operation. Fluid in both tunicæ. Discharged in 72 days.

xvi. Hindu male, *æt.* 30. Small tumour of fourteen years' duration. No fluid in tunicæ. Usual operation. Recovered in 54 days.

xvii. Mahomedan male, *æt.* 38. Tumour weighing 3lbs. 8oz., of four years' growth. Removed by Dr. Pilgrim. Recovered in 60 days.

xviii. Hindu male, *æt.* 45. Scrotal tumour of twenty-two years' growth, weighing 3lbs. 3oz. Right tunica contained 32oz. of fluid; left a little. Usual operation. Recovered in 75 days.

xix. Hindu male, *æt.* 35. Tumour weighing 2lbs. 13oz., of fourteen years' growth. Health bad. Very large spleen. Removed by Assistant-Surgeon Syama Nirod Das Gupta in the ordinary way. Right tunica contained 20oz. and left 40oz. of fluid. Had persistent fever for eighteen days, but made a good recovery in 59 days.

xx. Hindu male, *æt.* 35. Tumour weighing 1lb. 15oz., of twenty years' growth. Usual operation by Assistant-Surgeon Syama Nirod Das Gupta. Tunicæ adherent. Discharged in 74 days.

xxi. Hindu male, *æt.* 45. Tumour weighing 18lbs. 13oz., of two years' growth. Suffering from fever. Removed as usual. Both tunicæ contained fluid. Fever persisted for a week, and was followed by diarrhœa for another week. The wound healed kindly in 58 days.

xxii. Hindu male, *æt.* 45. Tumour weighing 27lbs., of seven years' growth. Usual operation. Both tunicæ contained fluid. Recovered in 56 days.

xxiii. Hindu male, *æt.* 32. Tumour weighing 28lbs. 10oz., of ten years' growth. Usual operation. Recovered in 53 days.

xxiv. Hindu male, *æt.* 57. Tumour weighing 9lbs. 10oz., of five years' growth. Usual operation. Left tunica contained 48oz., and right 10oz. The wound healed well, but he became demented in the fourth week, and was removed by his friends 80 days after operation. It has been ascertained that he recovered his senses on going home.

* * * The most remarkable fact about this series of cases is that they all recovered—a circumstance probably unprecedented in the history of the Medical College Hospital. No selection was made; but the majority of the patients were young, and the majority of the tumours small. The heaviest weighed 28lbs. 10oz. The operation and after treatment were precisely the same as in recent years, and the wounds were kept aseptic in every instance.

1c. *Elephantiasis of labia.*—i. Hindu female, *æt.* 16. Both labia majora hypertrophied and ulcerated on the inner surface. A serpiginous ulcer on perinæum. The labia were removed by elliptical incisions, and the ulcer dissected off. Edges of wound approximated by catgut stitches. Recovered in 32 days.

ii. Hindu female, *æt.* 18. History of recent syphilis. Left labium majus much enlarged; sinus leading into its interior; right slightly so. Both

removed. Left contained a large abscess cavity which was dissected out. Lips of wounds approximated with catgut. Healed in 24 days.

2a. *Fibroma of upper jaw*.—Hindu male, *æt.* 20. This was a very remarkable case. A flat mass springing by a narrow pedicle from the gum opposite the first and second upper bicuspids filled the cavity of the palate. It had been growing for eight years. It was easily removed by chain *ecraseur*, and the pedicle touched with a cantery. He left the hospital in 5 days and has not been heard of since.

2c. *Fibroma of ischio-rectal fossa*.—Hindu female, *æt.* 35. Large hard tumour of four years' growth, occupying and distending right ischio-rectal fossa. It was exposed by a straight antero-posterior incision and shelled out. It was adherent to the lower end of the rectum which was removed. The wound remained aseptic and healed mostly by granulation in 42 days.

2d. *Fibroma of leg and thigh*.—Hindu male, *æt.* 18. Admitted on 11th October with two immense tumours, one congenital at back of right thigh, extending from tuber ischii to popliteal space, the other of five years' growth at back of right leg from knee to lower third. The latter was removed on 13th October. A longitudinal incision about a foot long was necessary to expose it from end to end. It was found to be intimately connected with muscles and fasciæ, which had to be dissected off its surface and to spring by a fibrous root from the head of the fibula. Its removal was facilitated by splitting it in two. The wound was closed throughout, and provision made for drainage by passing two tubes through

holes made on opposite sides and at opposite ends. The mass weighed $2\frac{1}{2}$ lbs., and was firm and purely fibrous; the wound which remained aseptic healed mostly by first intention.

On the 15th of November the tumour of the thigh was removed in a similar manner. The incision was 14 inches long and the mass, which also weighed $2\frac{1}{2}$ lbs., was found to be attached to the linea aspera. The wound was similarly dealt with, remained aseptic, and healed in 11 days, the drainage tracks closing in 19 days. He was discharged on 15th December.

3. *Myxoma of the nose*.—Mahomedan female, *æ*t. 30. A mucous polypus removed by wire ecraseur. Discharged in 2 days.

4. *Angioma of lip*.—Hindu male, *æ*t. 24. The tumour which involved the right half of the upper lip was isolated by a clamp specially devised by Dr. McLeod for lip operations and injected in every part with saturated solution of tannin introduced by a hypodermic syringe. It swelled and on subsidence of the swelling underwent some shrinking, but the result was not satisfactory, and it was thought best to remove it by a V-shaped incision. This was done 15 days after the injection. The clamp was again used with advantage on this occasion. The upper part of the wound healed by first intention, and the lower by granulation. Satisfactory union was obtained in 21 days.

5. *Adenoma of mamma*.—i. Hindu female, *æ*t. 56. Tumour of right breast about the size of a cocoanut which had been growing since she was 16 years old. Two skewers were passed under it at right angles and a rubber cord wound

tightly round the base of the growth, which was thus removed bloodlessly. The wound healed by first intention in 10 days, and the drainage tracks were closed in 15 days. Discharged in 26 days.

ii. Hindu female, *æt.* 35. Tumour of left breast of two years' growth fungating through a cut made by a native barber. It was easily removed, and the resulting wound healed mostly by first intention. Discharged in 22 days.

5. *Lymphadenoma of axilla.*—East Indian male, *æt.* 30. A movable tumour about the size of an orange in right axilla of six months' growth. It was exposed and removed. The mass consisted of a group of enlarged glands undergoing caseation. The wound healed in 11 days.

7. *Keloid tumour of shoulder.*—Hindu male, *æt.* 16. A circular mass of keloid 7 inches in circumference on right shoulder caused by the application of sulphuric acid one year ago to a patch of ringworm. The mass was dissected off and flaps taken from the neighbourhood to cover the denuded area. The wounds united partly by first intention and partly by granulation. Left hospital in 50 days without any indication of recurrence.

8. *Exostosis of external meatus.*—East Indian male, *æt.* 22. The meatus has been undergoing progressive contraction for three years by a hard growth springing from the posterior wall. The passage barely admits a probe. The growth was exposed and removed by a chisel. Contraction of the soft parts was subsequently prevented by retaining a piece of drainage tube in the meatus until healing took place. Discharged in 39 days.

9a. *Sebaceous cyst of scalp.*—i. East Indian, male, *æt.* 70; situated on vertex, of twelve years' growth; had been recently punctured. The cavity was laid open, the wall of the cyst avulsed, and the wound healed by granulation in 7 days.

ii. Hindu male, *æt.* 25. Situated on occiput, size of a walnut, similarly removed. Wound healed by granulation in 17 days.

9b. *Sebaceous cyst of neck.*—European male, *æt.* 30. Situated over left sterno-mastoid, size of a pigeon's egg; inflamed. Removed by dissection. Wound healed in 6 days.

9c. *Sebaceous cyst of groin.*—Hindu male, *æt.* 45. This was a case of epithelioma of the penis, with cancerous glands in left groin which were removed. A swelling in right groin was thought to be cancerous and was dissected out. It proved to be a sebaceous cyst. The wound healed kindly.

10. *Condylomata.*—These were removed by scissors and sharp spoon. The resulting ulcers healed kindly.

11. *Gumma of wrist.*—Hindu female, *æt.* 40. A soft swelling on the back of left wrist, which appeared a month ago. No history of syphilis. It was incised and scraped out, the lower end of the ulna was eroded, and the bare portion was removed by gouge. The wound healed by granulation in 27 days.

12. *Lupus of cheek.*—A hill woman, *æt.* 46. A large sloughy lupoid ulceration of left upper lip and gum of thirteen months' standing gradually increasing; edges hard and serpiginous; several teeth had fallen out. The diseased tissues were

removed by knife, several necrosed teeth extracted, and the gum scraped. A large gap of the left side of the face resulted, to fill up which a quadrilateral flap was taken from what remained of the cheek. This failed to unite throughout, and a second plastic operation became necessary (see below); The lupoid disease did not recur.

13a. *Diseased cervical glands.*—The glands in both these cases were strumous and were exposed by incision and shelled, dissected, and scraped out according to their condition. Repair was very slow in both cases owing to constitutional depravity.

13b. *Diseased axillary glands.*—Hindu male, æt. 28. Had had a large sarcoma of left breast removed on 28th of December 1889. The glands of left axilla underwent rather rapid enlargement during convalescence from that operation, and were extirpated on 16th January 1891. These were found to be infiltrated and cystic. The wound healed in 19 days.

13c. *Diseased inguinal glands.*—These fourteen cases represent all classes of diseased glands that had resisted treatment,—virulent bubo glands disorganised by caseation and suppuration, indolent enlargements, open partially destroyed glands, malignant glands, &c. In the majority the disease was confined to one side; in five cases both sides were affected. The method of removal varied according to circumstances: simple enucleation, dissection or erosion with sharp spoon. In all cases every vestige of gland tissue was removed, and the wound left to heal by granulation, antiseptic measures being strict-

ly carried out. The process of repair occupied from a fortnight to two months according to the size of wound and constitution of patient. In all cases a satisfactory result was obtained.

14. *Hæmorrhoids*.—In two cases the lumps were removed by scissors according to Whitehead's method, and in one by Smith's clamp and cautery.

VII.—REMOVAL OF FOREIGN BODIES.

1. *Extraction of a piece of wood from the neck*.—Hindu male, *æt.* 40. Fell from a tree six months ago on to some dry twigs, one of which entered the root of the neck right side and broke, leaving a piece behind. A sinus persisted, through which a hard substance was felt by the probe. The sinus was enlarged, and a cylindrical piece of wood $\frac{3}{4}$ inch long and $\frac{1}{3}$ in diameter was extracted. Patient spat a little blood after the operation. The wound healed in 15 days.

2. *Extraction of a stem of grass from the male bladder*.—Hindu male, *æt.* 24. Was in the habit of passing a stem of grass into the urethra to relieve retention, and one day he lost hold of it, and it slipped in. He complains of a pricking sensation in the bladder and occasionally passes blood. He has increased frequency of micturition, and the urine contains mucus and phosphates. Nothing could be detected with a sound. A small lithotrite was introduced under chloroform, and a stem of closely jointed grass withdrawn. It measured $6\frac{3}{4}$ inches in length. No irritation or constitutional disturbance ensued, and he left hospital in two days.

VIII.—REMOVAL OF VESICAL CALCULI.

1. *Litholapaxy*.—i. Mahomedan male, *æt.* 45. Symptoms of six years' duration. The stone was crushed and *débris* removed by Bigelow's method. Five introductions were necessary. Fragments weighed $7\frac{1}{2}$ drachms. Had slight fever and cystitis for a few days. Discharged in 15 days.

ii. Mahomedan male, *æt.* 35. Symptoms appeared two years ago. One introduction sufficed; *débris* weighed 50 grains. Discharged in 5 days.

iii. Hindu male, *æt.* 35. Symptoms appeared nine months ago. Two introductions; *débris* weighed 20 grains. Discharged in 4 days.

iv. Hindu male, *æt.* 50. Symptoms of three years' duration. Three introductions; two small stones. Discharged in 2 days.

v. Hindu male, *æt.* 50. Symptoms of six years' duration. Three introductions. Very hard oxalic stone weighing 7 drachms 10 grains; slight fever and cystitis for a few days. Discharged in 7 days.

vi. Hindu male, *æt.* 46. Has had urinary trouble for five years. Urine offensive; contains ropy mucus and phosphates. Urethra narrow and prostrate enlarged; instruments passed with much difficulty. Five introductions. 5 drachms and 40 grains of *débris* evacuated; fluid observed to be highly sanguineous towards the last. Next day he was low and had passed no water, and a full-sized catheter failed to relieve him. There was considerable supra pubic dullness. Suspecting that the bladder was filled

with clots, the perinæum was divided and the bladder easily entered. It was empty with exception of a few blood clots and grains of stone. He grew worse and died of collapse on the third day. On *post-mortem* examination a rent was found in the roof of the bladder opening into the prevesical space. Through this fluid (water, blood and urine), and some calculous *débris* had passed beneath the peritoneum as far as the loins. The membrane was injected.

* * It would have been better to have cut this man. The urethral difficulties had probably caused the beak of the lithotrite to come into sharp contact with the bladder roof at the moment of slipping in. A jerk was experienced, as the prostatic resistance was overcome by firm pressure, but no suspicion of the occurrence of any accident was entertained. The distance to which the fluid travelled was due to the aspiration.

vii. Hindu male, *æt.* 35. Symptoms of four years' duration. Eight introductions. *Débris* weighed 2 drachms and 49 grains. Slight cystitis. Discharged in nine days.

2a. *Lateral lithotomy*.—i. Hindu male child, *æt.* 4. Has suffered from urinary difficulties for a year. A stone weighing 1 drachm and 45 grains was extracted by the lateral method. The wound healed in six days. Patient discharged in nine days.

ii. Hindu male, *æt.* 50. Symptoms of two years' duration. Urethra would only admit No. 6 sound. A cutting operation was therefore preferred, and a stone weighing 6 drachms and 30 grains was removed by the left lateral method.

The wound healed in 19 days, and patient was discharged in 22 days.

iii. Hindu male child, *æt.* $3\frac{1}{2}$. Symptoms of stone observed about a year ago. A stone weighing 1 drachm and 40 grains extracted by left lateral incision. Wound healed in 18 days.

iv. Hindu male child, *æt.* 3 years. Symptoms of two months' duration. Left lateral lithotomy; stone weighed 1 drachm and 52 grains. Smart bleeding occurred on the fourth day, which was stopped by passing a catgut loop round the left pudic artery. Wound healed in ten days. Discharged in 16 days.

26. *Median lithotomy.*—i. East Indian male, *æt.* 51. Has suffered from occasional retention for two years. A stone was detected in the prostatic urethra. Extraction by forceps failing, the urethra was opened by perinæal section and two small calculi weighing respectively 8 and 6 grains removed by dressing forceps. The bladder was explored, and no other stone detected. A full sized catheter was passed every fourth day to maintain patency of the urethra. Discharged well in 31 days.

ii. Hindu male, *æt.* 45. Suffered from gonorrhœa resulting in perinæal abscesses and fistula 17 years ago. Perinæal section was performed in this hospital, the urethra fully dilated, and patient taught to pass instruments. He remained well till eight months ago when he had a perinæal abscess followed by a sinus in the middle line, which has continued patent, and discharges urine mucus and pus freely. A large stone was detected in the bladder. The perinæal sinus was enlarged, and the finger introduc-

ed into the bladder. A large stone was found. The bladder was contracted and fasciculated and lined with a fibrinous membrane studded with phosphatic grit. The stone was crushed and removed by scoop, and the membrane scraped off the interior of the bladder, which was carefully syringed out with warm boracic lotion. A tube was tied in. He had very little constitutional disturbance. The bladder was regularly washed out with dilute acid to prevent phosphatic deposit. The urethra was kept patent by occasional passage of full-sized instruments. He left hospital 67 days after operation in good health with the perinæal opening almost closed.

IX.—INCISIONS.

1. *Laryngo-tracheotomy*.—This was resorted to as a preliminary in the case of Kocher's operation already related (see VI. A. 1 *b*). The tube was removed on the 13th day, and the wound closed on the 21st day.

2. *Laryngotomy*.—Hindu female, *æt.* 40. Admitted with high fever and great dyspnœa from œdema glottidis. The larynx was opened through the crico-thyroid membrane by Surgeon J. R. Adie. The breathing was relieved, but patient died of exhaustion 13 hours afterwards.

3. *Herniotomy for strangulation*.—i. Hindu male, *æt.* 68. Right scrotal hernia of 30 years' standing. Has worn a truss for 16 years. The rupture descended in unusual bulk 33 hours before operation, and could not be returned. The symptoms of strangulation well marked. Ice and taxis tried before admission without effect. Sac laid open, contained sanious fluid, and about

a foot and a half of gangrenous small intestine. The mesentery, which was also gangrenous was tied in six segments and removed. The gangrenous gut was amputated, and the openings of the intestine stitched to each other and to the upper end of the wound. He began to pass stools through the wound on the second day, and seemed to do well till the sixth day, when symptoms of tetanus set in. These became rapidly worse, and he was removed by his friends in a moribund state on the seventh day.

ii. Mahomedan male, *æt.* 30. Right scrotal hernia of 18 years' standing, came down 30 hours before operation and could not be reduced. Taxis tried without effect; symptoms of strangulation well marked, patient very low. Sac opened, and a knuckle of ecchymosed small intestine returned. A bit of bruised and matted omentum was removed. The sac was left and wound stitched. He lived for two days, but never rallied properly. Died of exhaustion.

iii. Hindu male, *æt.* 30. Right inguinal hernia existed from infancy. Came down on morning of admission, and could not be reduced. Taxis tried without avail. Suffering from shock. Sac laid open. Stricture in neck divided and contents returned. Operation completed as for radical cure. Made an excellent recovery, and was discharged in 26 days.

iv. Hindu male, *æt.* 25. Right inguinal hernia of four years' standing. Came down ten days before admission, and has remained unreduced since then. Very low; abdomen tympanitic. Sac opened. Stricture in neck divided. Intestine, which was inflamed and claret coloured but firm,

returned. Operation completed as for radical cure. Patient did not rally. Passed several loose stools. Exhaustion progressive. Died 24 hours after operation.

v. Mahomedan male, *æt.* 50. Right scrotal hernia unreducible for five days with complete obstruction. Patient very low. Sac laid open. Intestine, highly congested but firm, returned. A mass of congested and matted omentum removed. Operation completed as for radical cure. Patient passed several stools but continued to sink. Died $16\frac{1}{2}$ hours after operation.

vi. Hindu male, *æt.* 55. Right inguinal hernia of four years' standing. Came down about 19 hours before operation. Ice and taxis failed. Sac opened by Dr. Pilgrim. Stricture at neck divided, and intestine returned, neck of sac isolated and tied, fundus left. Died of persisting shock 17 hours after operation.

* * * The foregoing is a very sad record. The fatal result in five out of six cases was undoubtedly due to delay in applying for relief. The only case in which any reasonable prospect of success existed made a good recovery.

4a. *Radical cure of inguinal hernia.*—i. Hindu male, *æt.* 45. Admitted with large left hydrocele from which 11lbs. and 10 ozs. of fluid were evacuated. He also had a right and very large scrotal hernia, for which he implored an operation, which was performed after some hesitation, because he suffered from chronic bronchitis. On exposing and opening the sac it was found to contain small intestine and a mass of omentum which was adherent to the interior of the sac. The gut was reduced, and the omentum

separated by knife, and its cut edge stitched with a continuous suture. It was then reduced within the ring. The operation was then completed in the usual way by tying the neck of the sac, isolating and removing the rest of it, bringing the pillars together with strong catgut, making an opening in the fundus of the scrotum and inserting a drainage tube into it, and finally applying an antiseptic dressing. The wound remained aseptic and promised well, but the man got broncho-pneumonia on the third day, and died of it on the fifth day after operation.

ii. Mahomedan male, *æ*t. 31. Right inguinal hernia of four years' duration. Operated on in the usual manner. Inguinal opening laced. The external wound healed in nine days. Discharged with a truss in 31 days.

iii. Chinaman, *æ*t. 30. Right inguinal hernia of 27 years' standing. Usual operation. Wound healed in 14 days. Detained in hospital by an abscess of the face. Discharged in 59 days.

iv. Eurasian male, *æ*t. 22. Right inguinal hernia of two and half years' standing. Usual operation. Wound healed in nine days. Discharged with a truss in 33 days.

v. Hindu male, *æ*t. 49. Right inguinal hernia of six or seven years' duration. Usual operation. Wound healed in 12 days. Discharged with a truss in 23 days.

vi. Mahomedan male, *æ*t. 55. Right inguinal hernia of two years' standing. Operation as usual. Wound healed in nine days. Discharged with a truss in 29 days.

vii. Mahomedan male, *æ*t. 55. Admitted with an incarcerated right inguinal hernia which

was reduced by taxis. He wanted to be cured by operation, and in a few days the usual procedure for radical cure was resorted to. Wound healed by first intention in ten days. Detained for 35 days for the treatment of a gluteal abscess.

viii. Mahomedan male, *æ*t. 45. Underwent operation for right inguinal hernia three years ago. Another rupture appeared on the same side, which was operated on successfully seven months ago. A small hernia then existed on the left side, which has grown large and troublesome. This was subjected to the usual operation. The wound healed in 12 days. Discharged with a double truss after 40 days' detention.

* * * The man underwent three operations for hernia, two on the right, and one on the left side. The result of the second operation on the right side was satisfactory when he was admitted for the third time.

ix. Hindu male, *æ*t. 46. Right inguinal hernia of 15 years' duration. He was operated on in the usual way. He fell into a state of dementia on the second day, refused food, removed the dressings, and passed his excreta in the bed-clothes. The wound gaped and healed by granulation. He was removed by his friends 72 days after operation. He subsequently returned, in his senses, to have the ulcer closed.

This occurred after a short residence, and the final result was satisfactory.

* * * This was the third case of post operation dementia observed during the year. The other two were cases of scrotal elephantiasis. Such cases are not uncommon. There was no pyrexia in this case.

x. Hindu male, *æ*t. 35. Admitted on 9th July, with double inguinal hernia, right side of four years' and left of one year's duration. The right side was operated on the 13th of July in the usual way. The wound healed by first intention in nine days.

xi. The left hernia, which was very small, was operated on 23rd of July, ten days after the right. The wound healed in 12 days. Patient discharged on 27th September (49 days) with a double spring truss.

xii. East Indian male, *æ*t. 50. Right inguinal hernia of 18 years' standing. Usual operation. Recovery delayed by an abscess, which formed in the scrotum. Discharged with a truss 69 days after operation.

xiii. Hindu male, *æ*t. 25. Admitted on 11th August with a left inguinal hernia in a strangulated condition. It was reduced by taxis after application of ice, and an operation for radical cure was performed on the 16th. Wound healed in 16 days. Discharged in 20 days.

xiv. Mahomedan male, *æ*t. 50. Right inguinal hernia and varicocele. Admitted on 17th August with strangulated hernia. It was reduced by taxis after application of ice. The hernia was operated on on the 23rd in the usual way. The varicocele was removed at the same time after ligation above and below. Wound healed in 14 days. Discharged on 6th of October.

xv. Mahomedan male, *æ*t. 30. Right inguinal hernia of five years' duration. Had undergone operation by Dr. O'Brien in October 1889. The hernia recurred in six months. The usual operation was performed. There was a scar at

the fundus of the sac giving evidence of the previous operation. Wound healed in 13 days. Discharged in 27 days.

xvi. Hindu male, *æ*t. 40. Right inguinal hernia of six months' duration; hydrocele on same side. Usual operation. Wound healed in 14 days. Hydrocele subsequently tapped and injected. Discharged in 31 days.

xvii. Mahomedan male, *æ*t. 32. Right inguinal hernia of six years' duration. Wound healed in nine days. Discharged in 23 days.

xviii. Hindu male, *æ*t. 40. Right inguinal hernia of ten years' standing. Usual operation. Did well for two days. On the third day patient removed his dressings, the wound putrefied, the temperature ran up, and on the sixth day gangrenous cellulitis set in. Broncho-pneumonia appeared on the 12th day, and lasted for a week. The cellulitis gave rise to a number of sinuses which suppurated freely. Died of exhaustion 43 days after operation. On *post-mortem* examination the peritoneum and bowels were found healthy. The sinuses were superficial.

xix. Mahomedan male, *æ*t. 30. Right inguinal hernia of 19 months' duration. Operated on in the usual way. Wound healed in 10 days. Discharged in 15 days.

* * * These ruptures were situated with two exceptions on the right side. The operation has been fully described in previous papers. The neck of the sac was transfixed as well as tied, and the sac removed in all cases. When the opening was large, it was closed by lacing the ring; the end of the first ligature being crossed and re-entered from within outwards higher up. An

opening was made in the fundus of the scrotum in all but one case, and a drainage tube inserted. This was withdrawn after a few days. Drainage was also provided above by leaving the end of the pillar sutures long. The track of the tube and threads sometimes remained open after the wound had healed. Patients were detained until the parts had become quite callous, and invariably provided with a truss with instructions to wear it for six months. Two of the operations were for recurrence after previous similar operation. In one of the two fatal cases death was due to lung complication, which cannot be specially associated with the operation, and in the other, the succession of misfortunes, which ended in death, was due to the patient's own act in exposing the wound. This was the only case in which the wound became septic.

4b. Operation for the cure of ventral hernia.—European male, aged 40, a sailor, admitted into the medical wards with severe epigastric pain. A hernial protrusion was detected about two inches above the umbilicus. Patient emaciated; unable to sleep from incessant pain. He was transferred to the First Surgeon's ward to have the hernia operated on, as it was suspected that the pain, &c., were due to it. The lump was exposed by careful dissection and found to be a lobule of fat (subperitoneal), projecting through a hole in the linea alba. This was reduced, the aperture closed with catgut stitches, and the wound carefully dressed antiseptically. It healed by first intention. The pain was less for two days, and then recurred as severely as ever. He began

to get epileptic fits five days after the operation, and died of exhaustion, caused by a succession of these, next day. On *post-mortem* examination an aneurism of the cœliac axis was found. The wound had undergone aseptic repair. No peritonitis.

5. *Operation for imperfectly descended testis and congenital hernia.*—Mahomedan male, *æt.* 17. Admitted with a strangulated left inguinal hernia, which was reduced after application of ice. The testicle of that side remained in the canal, corresponding half of scrotum empty. Two days after admission an incision was made in the left groin over the external ring. The testicle was found with an unobliterated processus, which was dissected out, tied at the external ring, divided and reduced. The testis was then brought down into the scrotum and secured there by a catgut loop. The sides of the inguinal canal were laced together by the same material, a counter-opening made in the side of the scrotum, and a drain inserted. The external wound was then stitched, and an antiseptic dressing applied. The wound healed by first intention. The catgut loop was removed on the 11th day, and the testis remained in position. Discharged 17 days after operation.

6a. *Laparotomy for injury.*—Hindu male, *æt.* 4. Gored in the stomach by a wild boar, intestines protruding. Admitted in a state of profound shock. The intestines were carefully washed with warm boracic lotion, and returned after the wound had been enlarged. It was then carefully stitched. The child did not rally from

the shock, which proved fatal three hours after operation.

6b. *Laparotomy for obstruction.*—Mahomedan male, *æt.* 30. Admitted into the 1st Physician's ward for obstruction of the bowels of four days' duration. After 24 hours' treatment (including puncture of the distended intestines), he was transferred for operation. The symptoms pointed to the descending colon as the seat of obstruction. The abdomen was opened in the middle line, and a twist of the sigmoid flexure was found. When this was undone, liquid fæces escaped freely per anum. The abdominal wound was stitched. He continued to pass stools, but the prostration, which existed previous to the operation, became more profound, and he died of exhaustion eight hours after it.

7a. *Tenotomy for contracted hamstrings.*—
i. Hindu male, *æt.* 45. Admitted with flexed knee-joints, the result of gonorrhœal arthritis. Extension by splints having been tried in vain, the hamstring tendons were divided subcutaneously, and the joints straightened. The punctures healed in a few days. He was provided with crutches, and his ankles were weighted with shot bags, each containing 2 lbs. After 74 days' treatment, he left the hospital with good use of his lower extremities.

ii. Mahomedan male, *æt.* 35. Seventeen months ago his patella was broken, and knee-joint damaged by the tusk of a wild boar. The wound healed in six months, but the fragments of the broken bone remained widely apart, and the joint was fixed at an angle of about 120° , very little motion remaining.

The hamstring tendons which were very tense, were divided subcutaneously, and the joint straightened. The limb continued weak and useless, and wiring of the broken patella was done seven days later with good success (see IV, 2).

7b. *Tenotomy for talipes equinus*.—European female, *æ*t. 30. Suffered from fever seven years previously which caused contraction of the muscles of the calf. The Tendo Achillis was divided subcutaneously on both sides, and the deformity was completely remedied.

7c. *Tenotomy for talipes equino-varus*.—These four cases were in children, two single, and two double. The cases present no feature worthy of note.

8. *Incision for contracted orifice of meatus urinarius*.—i. Mahomedan male child, aged 10 months. The glans penis was congenitally cleft inferiorly, and the urethra opened by a very small orifice, through which urine came in drops, in this cleft. A fine canalicular director was passed, and the orifice slit open, and the edges stitched to maintain patency. Discharged in four days with a wide meatus through which urine came in good stream.

ii. Mahomedan male, *æ*t. 12. A precisely similar case. Similarly treated. Discharged in nine days. Result satisfactory.

9. *Internal urethrotomy*.—Hindu male, *æ*t. 20. This was a case of stricture, complicated with scrotal fistula, in which gradual dilatation had been practised with good effect. A band crossed the roof of the urethra which impeded

the passage of instruments. This was divided by Civiale's urethrotome, and no difficulty was subsequently experienced.

10a. *External urethrotomy (Cock's operation).*
—i. Hindu male, *æt.* 30. Admitted with retention due to stricture of eight months' standing. The bladder had been tapped with a fine trochar above the symphysis. It was found impossible to introduce a catheter. There was a hard swelling of the perinæum, the prepuce was œdematous, and bladder distended. Patient low and anxious. The perinæum was transfixed with a straight bistoury which entered the cavity of an abscess. Through this a Syme's catheter was introduced into the bladder and retained. Incisions were made in the œdematous prepuce. The result of the operation was satisfactory. The urethra was dilated, and kept dilated by occasional passage of instruments. Discharged in 36 days with perinæal wound closed, and able to make water in full stream.

ii. Hindu male, *æt.* 30. Admitted with retention due to stricture and boggy fluctuating swellings in the perinæal and suprapubic regions. Instruments could not be introduced into the bladder. Tongue dry. General condition low. The bladder was reached by Cock's method, and the suprapubic and perinæal swellings freely incised. They emitted very fœtid pus and communicated with each other. Drainage tubes were inserted, and a Syme's catheter tied in. He was relieved by the operation, and did well for two days. He then got high fever, diarrhœa, and hiccup, and died of septic poisoning on the fifth day after operation.

iii. Hindu male, *æ*t. 40. Admitted with extravasation of urine caused by perinæal abscess. Penis and scrotum gangrenous. The bladder was reached by Cock's method, and the infiltrated parts freely incised. A Syme's catheter was tied in. The symptoms of septicæmia gradually increased. He became delirious seven days after operation, and died of exhaustion next morning.

10b. *External urethrotomy (Syme's operation)*

—i. Mahomedan male, *æ*t. 45. Admitted with stricture and several fistulæ,—perinæal, scrotal and pubic. The urethra was dilated with Lister's sounds, but no improvement took place. The perinæum was laid freely open on a guide, the fistulæ incised, and a Syme's catheter tied in. This was retained for seven days, and a full sized sound was passed every third or fourth day into the bladder. The fistulæ healed, and perinæal wound gradually closed. He left hospital after 128 days' residence, passing urine in full stream per urethram.

ii. European male, *æ*t. 40. Admitted with stricture of seven years' standing. This was treated by rapid dilatation by means of Lister's steel sounds. The operation was followed by high fever, which subsided next day; but on the third day the prepuce scrotum and perinæum were found to be swollen, and the latter tender on pressure. Perinæal section was performed on a guide, free incisions made in the swollen parts, and a soft catheter tied in. He continued to suffer from fever. An abscess (? pyæmic) formed suddenly in the right groin on the third day and was opened. On the fifth day sudden and severe bleeding took place from the wound,

and he died of exhaustion due to the combined effects of septic fever and secondary hæmorrhage.

iii. Hindu male, *æt.* 26. Admitted with retention of urine and œdematous penis, scrotum and perinæum. About eleven days previously he had applied at the outdoor department for relief of retention. An impacted calculus was then detected and extracted. He was able to pass water freely in the interval. The urethra admitted a No. 7 grooved staff easily, and on this the perinæum was freely divided, and a Syme's catheter introduced into the bladder. Incisions were made in the œdematous parts, and through one of these from between the testes foetid pus freely welled out. The cavity of this abscess communicated with the urethra. A drainage tube was inserted. His temperature became normal soon after the operation. A large slough came out of the abscess cavity which then collapsed and contracted. The catheters were withdrawn on the seventh day, and a full sized instrument passed every few days. The perinæal wound gradually closed, and he left hospital 37 days after the operation, able to pass water per urethram in full stream.

* * * The abscess in this case was no doubt due to extravasation at the site of impaction.

iv. Hindu male, *æt.* 40. Was under treatment for carbuncle of right thigh when an abscess formed in the perinæum causing retention. This was laid open, the strictured urethra divided, a No. 10 catheter passed, and a Syme's catheter tied in and retained for two days. A full sized instrument was occasionally passed, and the man was discharged quite well in 67 days.

v. Mahomedan male, *æ*t. 55. Admitted on 15th May with stricture, retention of urine, and fistula at the root of the penis, right side. An instrument could not be passed through the stricture. The urethra was opened in front of the stricture after Wheelhouse's method. The grooved probe was then passed through the stricture, which was divided freely, and a Syme's catheter was introduced and retained for three days. A full sized instrument was subsequently passed every few days, and the perinæal wound allowed to close. On the 20th of June, an abscess formed at the root of the penis, and burst, the fistula at this site being then re-established. On the 24th perinæal section was again performed. The fistula closed on the four day. A full sized instrument was passed every fourth day, and he was discharged well on the 23rd July.

vi. Hindu male, *æ*t. 40. Admitted with stricture and penile scrotal and perinæal fistulæ. The stricture was gradually dilated, but the fistulæ persisting, perinæal section was performed. He was detained in hospital for 146 days. His spleen was large, and he suffered occasionally from malarious fever. Eventually all the fistulæ closed with exception of the penile fistula. He was able to make water in full stream per urethram when he left hospital.

vii. Hindu male, *æ*t. 46. This was a case of litholapaxy, in which suppression of urine followed the operation under peculiar circumstances (*vide* VIII, 1, vi). The perinæum was opened on a guide, under the impression that the case was one of retention due to mechanical obstruction by blood clots.

10c. *External urethrotomy (Wheelhouse's operation).*—i. Hindu male, *æt.* 30. Admitted with stricture, which was in process of gradual dilatation, when he absconded. He returned with aggravated symptoms, and intermittent dilatation was again resorted to, but without satisfactory relief. The urethra was opened in front of the stricture, which was entered and divided on Wheelhouse's director-probe. The bladder was thus easily reached. A full-sized instrument was passed occasionally, and patient absconded a second time before the cure was complete 23 days after operation.

ii. Mahomedan male, *æt.* 50. Fell on his perinæum 28 years ago, injuring his urethra. This injury resulted in stricture, which was dilated 16 years ago by Dr. Lawrie, and recurring was again dilated three years ago by Dr. McLeod. On this occasion he came with retention, and as a catheter could not be introduced, the stricture was divided by Wheelhouse's method, and a full-sized catheter introduced. Care was taken to keep the urethra fully dilated, and he was discharged well in 22 days. He has since then come to have a bougie passed occasionally.

iii. Hindu male, *æt.* 30. Admitted with stricture and ten fistulous openings—perinæal, scrotal, penile and pubic. The stricture was tight and tortuous, and admitted with difficulty the smallest probe pointed bougie. No urine came through the urethra. As the case was not a promising one for gradual dilatation, Wheelhouse's operation was performed, and a Syme's catheter tied in. This was removed on

the seventh day, and a full-sized instrument was subsequently passed every fourth day. The fistulæ had closed with exception of two, one pubic and one penile, and he was doing well, when, on the 44th day, he was attacked with dysentery which proved intractable. He died of wasting and exhaustion 56 days after operation.

iv. Hindu male, *æt.* 40. Admitted with very tight stricture and eight perinæal fistulæ, Wheelhouse's operation was performed. A full-sized instrument introduced per urethram, and Syme's catheter tied in. This was removed on the third day, and a full-sized instrument subsequently passed at intervals. He left hospital in 69 days with the fistulæ and perinæal wound closed, and able to make water in good stream.

* * The three operations above illustrated have each their separate sphere and are by no means interchangeable. Syme's is applicable to an obstinate or recurrent or very callous or resilient stricture through which a guide can be passed into the bladder. Wheelhouse's method is useful in the case of a very tight or tortuous stricture through which an instrument fails to pass or when false passages exist, and there is a doubt whether the instrument fairly traverses the urethra or reaches the bladder. Under these circumstances the plan of opening the urethra in front of the stricture and deliberately seeing, entering and dividing it is satisfactory, and if patiently and cautiously carried out always successful.

Cock's transfixion of the perinæum in front of the rectum is the only resort in cases when by injury, destructive disease or reckless in-

strumentation the urethra has been lacerated or destroyed, an instrument cannot be passed, retention is urgent and extravasation imminent or in actual existence. The cases above related were all of a very aggravated type, and are very common in India as a result of neglect or mismanagement.

11. *Incision for imperforate anus.*—Hindu female child, six months' old. Anus absolutely imperforate, passes fæces through vagina. An incision was made in front of the tip of the coccyx. A director was passed through the recto-vaginal fistula and the rectal cloaca pushed into the wound. The gut was then incised, pulled down, and its edges stitched to the edges of the skin wound. Fæces came at once through the opening. The stitches were removed on the fourth day. Stools were passed without difficulty through the new anal opening, and none came per vaginam. The child was not brought back after that date.

12. *Incision for stricture of anus.*—Hindu male, *æt.* 24. Six months previously he applied some caustic to his piles which caused them to slough off. The process of cicatrization reduced the orifice to the size of a crow-quill. This was enlarged by antero-posterior incision in front and behind, and the edges of the cut were stitched together. About 3lbs. of fæces were passed at once. The edges of the wound healed as stitched, and an excellent anal opening resulted. He remained in hospital 45 days.

13. *Incision for stricture of rectum.*—i. European female, *æt.* 23. Stricture of syphilitic origin, complicated with recto-vaginal fistula.

An incision was made posteriorly, and the gut kept open subsequently by bougies.

ii. Hindu female, *æt.* 20. Tight stricture in lower third of rectum with two internal piles. The piles were removed by clamp and cautery, and the stricture incised posteriorly. Bougies were subsequently passed. Result satisfactory. Detained 57 days.

14. *Incision for recto-vaginal fistula.*—European female, *æt.* 23. History of syphilis and stricture of rectum (see 13, i). An abscess formed in left labium about a fortnight before admission which burst, and *fæces* and flatus were observed subsequently to pass through the aperture. A director was passed through the sinus into the rectum, and cut out as in an operation for anal fistula. The wound healed by granulation in 53 days.

15. *Scrotal abscesses.*—Of these six cases, four were suppurated hydroceles, one a suppurated hæmatocele, and one a scrotal abscess. They were all treated by antiseptic incision and drainage, and did well, the cavity of the tunica becoming obliterated in about a month.

16. *Large abscesses.*—It would serve no useful purpose to detail these twenty-five cases, all of which did well under antiseptic management.

17. *Sinuses.*—These were the result of large abscesses untreated or badly treated. They were laid open, freely scraped, rendered aseptic, and treated for granulation, rest of body and part and constitutional treatment being carefully carried out. The result of treatment was satisfactory in all but one case which, getting impatient, absconded.

X.—REPARATIVE OPERATIONS.

1. *For ectropion.*—Hindu male, *æt.* 8. This child was admitted with severe burn of face, arm, and forearm. Both lids of right eye were everted by the cicatricial contraction. Two plastic operations were required. Triangular flaps were cut above and below, the lids forming the base. The sides of the wound were approximated by stitches. The tissues were more or less cicatricial, and the result was not satisfactory. On the second occasion flaps were cut and transplanted to support the replaced lids with better success. Assistance was derived from stitching the lids together for a few days.

2. *For closing an opening in the cheek.*—Nepalese female, *æt.* 46. The deficiency in this case was due to the removal of a large lupoid growth from the left cheek. Two operations were found necessary, consisting in the transplantation of flaps from the neighbourhood. On the second occasion the upper and lower lips were freed and moved across to the left. A small gap remaining in the corner of the mouth, a third operation was proposed, but not consented to. There was no return of the lupus when patient left hospital after 111 days' treatment.

3. *For lacerated perinæum.*—Hindu female child, *æt.* 4. This girl had been brutally outraged by having a stick thrust into her vulva. The perinæum was completely and badly lacerated. The edges of the ragged wound were brought together by stitches. These gave way and the wound gaped. The parts were allowed to heal, and the perinæum was then restored by splitting the cicatrix transversely and converting the trans-

verse into an antero-posterior wound after Lawson Tait's method. This proved successful. She remained in hospital 44 days.

4. *For ulcers on bony projections.*—In both cases the bony projection was removed by gouge; the skin freed all round, and its edges approximated by stitches. The result was satisfactory.

XI.—OPERATIONS NOT CLASSED.

1—2. *For prolapsus of the rectum.*—Hindu male, *æt.* 19. Admitted on 27th January with very aggravated prolapsus or procidentia of the rectum. This commenced eight years ago after an attack of dysentery, and has gradually got worse. The whole of the rectum is everted when he strains at stool, the prolapsed mass attaining the size of a foetal head, 6 inches long and 12 inches in circumference. It is reduced by hand with difficulty; mucous membrane chronically congested and thickened, covered with sticky mucus. Sphincter enormously dilated, admits the fist easily. On the 1st February the mucous membrane of the prolapsed gut was carefully cleaned and dried, and scored vertically from the sphincter to the fundus in seven places with a hot iron; each burn being about 4 inches long, and as deep as the muscular coat. The prolapsus was reduced, a morphia suppository inserted, and opium administered in full doses. The prolapsus recurred to the full extent on the 11th day; the ulcers caused by the cautery were stretched and bled, and after they healed the condition of the patient was as bad as ever. On the 1st of March the following operation was performed:—The prolapsed gut was thoroughly cleaned and re-

duced, the left hand following it until its fingers were felt above Poupart's ligament in the left inguinal region. The reduced gut was fixed to the abdominal wall in this region by two steel pins introduced from without inwards, transfixing the gut, guided across its interior by the fingers of the left hand and then passed outwards through gut and abdominal wall. They were placed at a distance of three inches. An incision three inches long was then made along the course of the gut through the abdominal wall till it reached the peritoneum, which was not opened. Two rows of four silk stitches were then passed through the wound, fixing the two outer coats of the intestine to the abdominal wall on each side of the wound, which was finally closed by three transverse stitches, which also held the two outer coats of the gut. This stitching was done by means of a handled needle, and the fingers of the left hand guided its course through the intestinal wall.

The wound was dressed antiseptically, and the patient put on full dose of opium. The needles were removed on the 2nd. Stitches removed and loosened on the 9th, his rectum being unloaded with a scoop on that day. He had a little fever on the 10th and 11th day, which was relieved by a carminative aperient. On the 12th the rectum was washed out. He passed his first stool spontaneously without prolapse on the 14th. The wound was completely healed on the 17th. He began to walk about on the 24th, and passed stools regularly without protrusion, and was discharged on 12th April. Readmitted 9th June with prolapse of the mucous membrane, which

slips out when he strains at stool to the size of a walnut, returning on pressure or resuming the erect posture. Sphincter very loose. A wedge of anal verge including the sphincter and loose rectal mucous membrane was clamped on the right side removed by scissors and cauterized. He recovered rapidly, and was discharged on 2nd August. The sphincter was still loose, and a slight prolapse occurred during stool on left side, disappearing on standing. The gut remained fixed at the site of stitches, and the rectal wall was smooth and tight. He came to show himself in November with slight prolapse of anal verge during stool; but an operation was not considered necessary. In February 1891 he again presented himself, and at his urgent request the clamp and cautery operation was repeated on left side. He appeared again on the 9th of July 1891, and showed a small protrusion of mucous membrane on straining, but it was not considered necessary to operate. He has not turned up again up to the present (October 1891).

* * * The foregoing presents a complete narrative of this remarkable case. The operation has been described in fuller detail in this journal and in the *Lancet*. The fixation of the upper part of the rectum to the abdominal wall was satisfactorily and permanently accomplished by the means resorted to, and the procidentia has been undoubtedly cured thereby; but the relaxed state of the sphincter permits of a protrusion of the anal mucous membrane which will probably continue all his life. The lad had a cancellous exostosis of the lower end of the femur successfully removed in April 1891.

Prolapse of rectum cauterised.—Mahomedan male, *æt.* 50. Has been subject to prolapse at stool for five years.

The prolapsed gut was scored longitudinally with a hot iron as in the last case. His bowels were kept confined for three days, and a dose of castor-oil given on the fourth. He left hospital six days after the operation, and has not been heard of since then.

3. *Paracentesis of bladder.*—This was resorted to as a temporary expedient to relieve a distended bladder. The case was subsequently treated successfully by external urethrotomy.

4. *Erasion of lupus.*—These three operations were performed on the same patient, who had a very aggravated lupus of the nose and adjoining part of the cheeks. (Var. *exedens*). Volkmann's sharp spoon was the instrument employed, and the final result was satisfactory.

5. *Erasion of rodent ulcer of face.*—Mahomedan male, *æt.* 58. Has been suffering for five years. The ulcer was scraped in May 1888 without benefit. The ulcer has destroyed the lids and right side of the face extensively and exposed and eroded the bone. The edges were dissected off, the diseased bone removed by a chisel, and the soft parts thoroughly scraped and mopped with chloride of zinc, 1 in 40. The eye-ball and anterior wall of antrum were removed. The ulcer contracted and seemed to be in process of healing when he insisted on leaving hospital 56 days after the operation. He has not been heard of since then.

6. *Continuous dilatation of stricture.*—The instruments used for this purpose were Lister's

steel probe pointed and graduated bougies introduced successively in series.

Three of the cases were complicated with fistulæ.

The result in all cases was satisfactory. The patients were retained for some time after full patency had been reached for the purpose of having a No. 9 12 passed every third day, and a few of them attended occasionally afterwards to have the instrument passed.

GENERAL REMARKS.

Mortality.—The general death-rate among the operations of 1890, namely, 6·41 per cent. of cases treated to the end, is unprecedentedly favourable, and this result has by no means resulted from any decline in the number of serious operations or in the gravity of the operations themselves, nor was any principle of selection resorted to; nor can the constitution and health of the subjects of operation be said to have undergone any change for the better. The result is entirely due to improved general and wound hygiene, and the absence of those sequelæ of wounds and injuries which used to be embraced in the comprehensive and suggestive term hospitalism.

Causes of death.—An analysis of the causes of mortality confirms this statement; very few of them are fairly attributable to the operation itself; the great majority being due to the conditions preceding operation for which operative treatment was—often too late—resorted to. Under this category come the four herniotomy and four urethrotomy cases, the two trephining

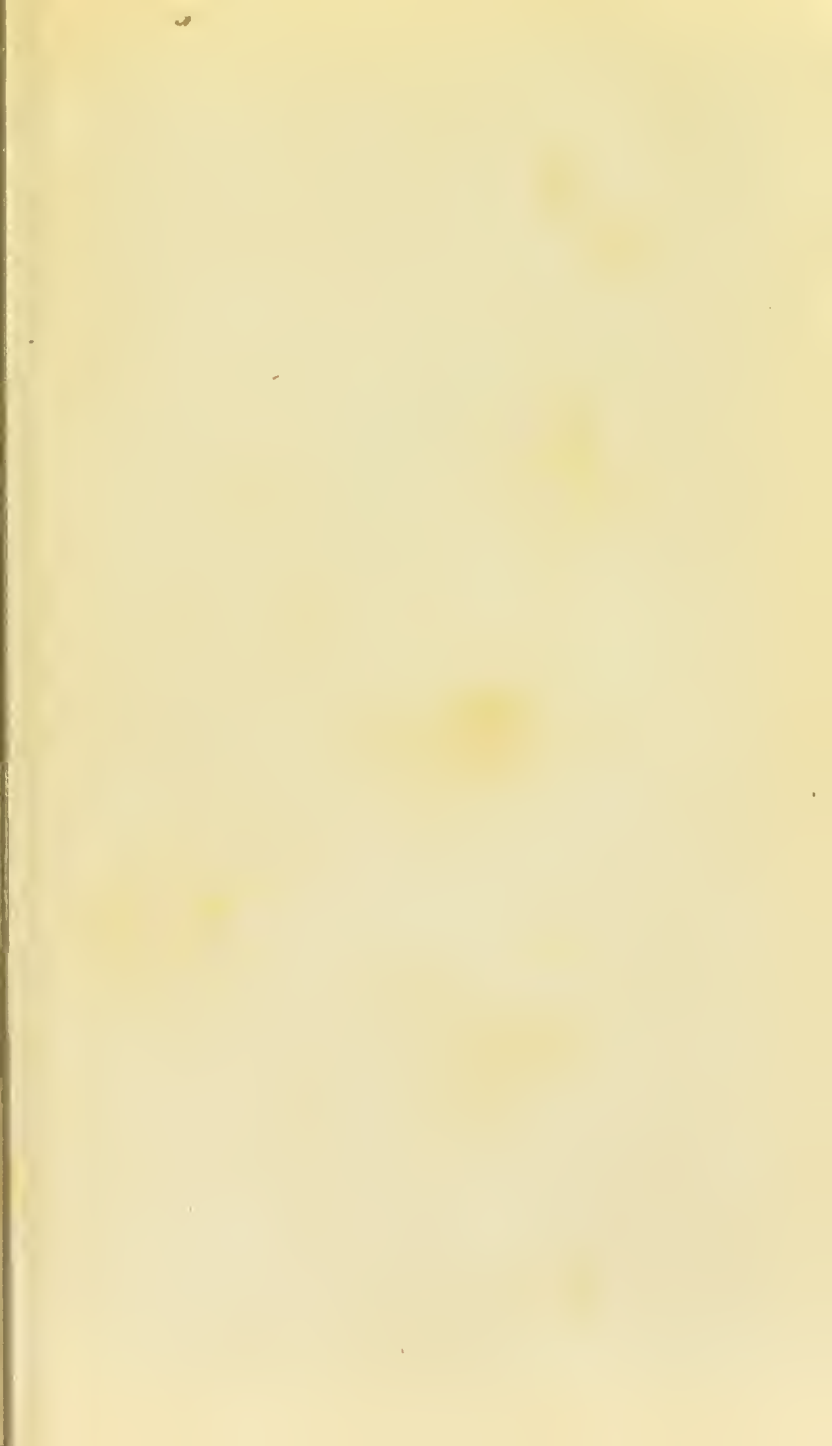
cases, the two laparotomy cases, the empyæma, the double amputation and the laryngotomy—15 of the 20. The two deaths which occurred among the 19 operations for radical cure of hernia were due to broncho-pneumonia, and in one of these the patient contributed to the fatal result by removing his dressings and inducing a septic state of wound. The fatal result in the case of ventral hernia was in no way connected with the operation. The death after litholapaxy resulted from an unfortunate accident.

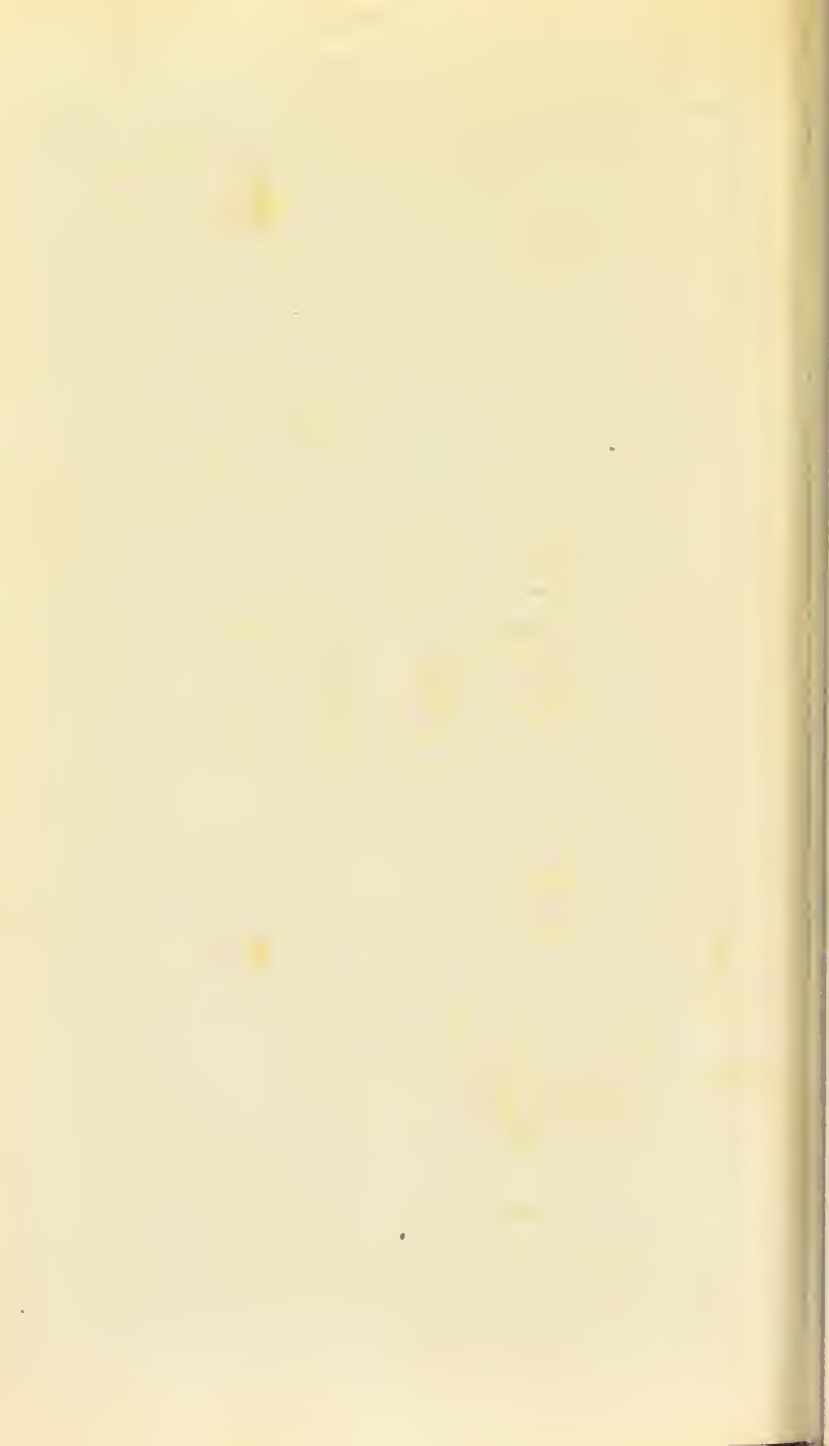
The only case of fatal tetanus was a septic case, a compound fracture of the radius admitted three days after the accident. Another case of tetanus occurred after herniotomy and open bowel. He was removed by his friends in a moribund state.

The experience of the year supports the statement previously advanced regarding the decline of this disease in the hospital since the introduction of antiseptic treatment.

Antiseptics.—The same system of dressing wounds, which has been described in previous reports, has been employed during the year. Bichloride of mercury gauze has been exclusively used as an outer dressing, and boracic gauze and lint as inner dressings. Equal parts of iodoform and boracic acid have been used for dusting.

A septic wound or sore is now a very exceptional thing in the hospital, and wounds admitted in a septic condition are in most cases rendered aseptic.







6.15

[1873-92]



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8.76

